Central/Downtown/Southern Scottsdale Circulation Study

Scottsdale Transportation Master Plan

Adopted January 2008

Prepared for:

City of Scottsdale

Prepared by:

HDR | S.R. Beard & Associates

Table of Contents

Figures

Tables

Central/Downtown Scottsdale Circulation Study

1.0 INTRODUCTION

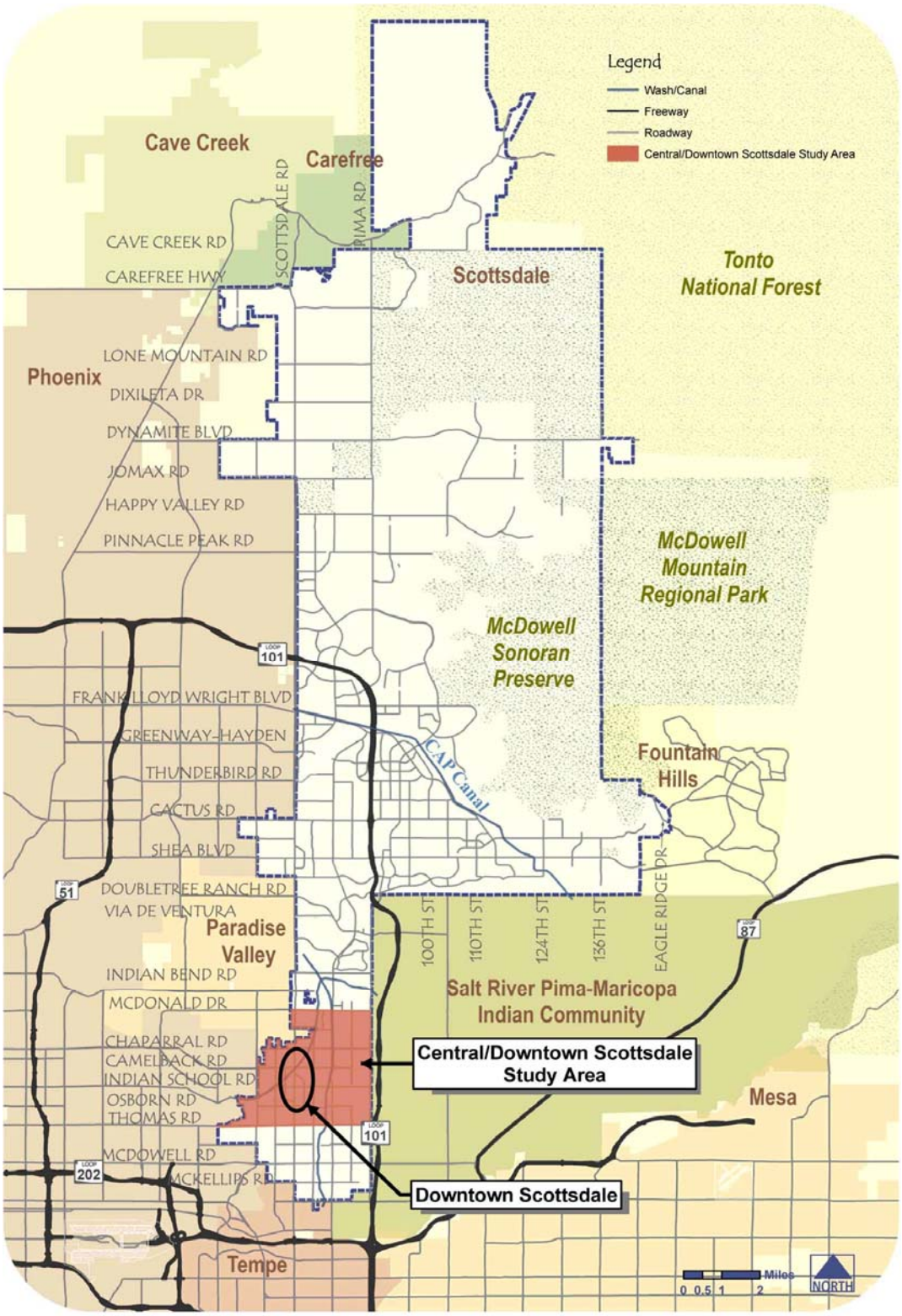
The Transportation Master Plan was initiated in November 2005 with Council approval of a contract with HDR Engineering, Inc. The scope of this project includes an examination of the Central/Downtown area of Scottsdale to address Downtown area transportation issues such as Chaparral Road, nighttime and daytime congestion, and ways to encourage non-automotive travel.

The Central/Downtown Scottsdale Circulation Area encompasses the most mature and most dense core of the City of Scottsdale, its traditional Downtown and adjacent areas *(Figure 1)*. The study area is bounded by 64th Street on the west, McDonald Drive on the north, Loop 101 on the east, and Thomas Road on the south. It is located between the Scottsdale/Phoenix/Paradise Valley jurisdictional boundary on the west, and the Scottsdale/Salt River Pima-Maricopa Indian Community (SRPMIC) to the east. Scottsdale's Downtown boundary is typically defined as 68th Street on the west, Chaparral Road on the north, Miller Road on the east and Earll Drive on the south.

The Master Plan area study was designed to provide objective data regarding existing and projected access and travel demand to and from, around, and through Downtown, and options to address future demand. To provide the most accurate data and projections, the project team has worked closely with Maricopa Association of Governments (MAG) regarding their socio-economic projections and the transportation modeling based on those projections. In January 2007, MAG began transferring their modeling system to new software and helped train city of Scottsdale staff in the new modeling software. The MAG transportation model is a regional model for all of Maricopa County. The new model will enable Scottsdale staff to do more precise subregional modeling (as opposed to regional modeling) for Scottsdale and specific areas of Scottsdale, including the Central/Downtown area. The modeling data was transferred to Scottsdale in early April and updated by MAG in June; the analysis has been completed for inclusion in the Transportation Commission's master plan deliberations for the Central/Downtown area and the information will continue to updated and refined.

One of the primary reasons for the Central/Downtown Scottsdale study was a resolution of the question of Chaparral Road. The portion of Chaparral Road between Miller Road and 78th Street was built as a two lane roadway and remains so. Through study and traffic analysis in April 2007 of the impacts of maintaining that section of Chaparral as a two-lane roadway, it was determined that it is not necessary to widen the road – other nearby roadways can handle the additional future traffic. On May 29, 2007, the City Council, in response to neighborhood requests, removed the concept of adding capacity by widening the roadway from further consideration in the Transportation Master Plan. Background information provided to the City Council is included in *Appendix A*.

Figure 1: Central/Downtown Scottsdale Study Area



2.0 CENTRAL/DOWNTOWN SCOTTSDALE AREA BACKGROUND

2.1 Development Patterns and Planning

When incorporated in 1951, Scottsdale was about two square miles in size and home to about 2,000 residents. The Central/Downtown circulation study area includes those original two square miles. The community developed mainly as a commerce center for local agricultural activity near Scottsdale's current Downtown. During the 1950's and 1960's Scottsdale expanded through annexation from Maricopa County, first south from Downtown and then northward to Deer Valley Road. By 1965, Scottsdale was 60 square miles with nearly 65,000 residents. During the late 1960's major service uses were established with Los Arcos Mall and the growth of small businesses in and around Downtown. Public amenities were also developed with the beginning of a strong public park system and creation of the Civic Center Complex. This area of Scottsdale contains a traditional development pattern of single family residential homes, with retail, office and apartment home uses along the arterial roadway network. Frequently, schools are located in the center of the one-mile square grid.

The roadway network in this area of Scottsdale generally follows a grid pattern of streets. These streets are usually arterial roadways on the mile alignment and collector roadways on the half-mile alignment.

2.1.1 Downtown Development

The Downtown area of Scottsdale has served as the functional and symbolic center of the City since its incorporation. As the City grew, the role of Downtown shifted from a country town center serving the surrounding agricultural activity to a community center for a budding array of single family homes. The city's growth has led to continuous change in the Downtown.

As the City grew and the Downtown was no longer the geographic center of the community, Downtown Scottsdale was redefined as the commercial, cultural, civic and symbolic center of the community. Downtown's character is defined in a multitude of ways: as a tourist attraction; as a specialty retail environment; as a place where the visual and performing arts flourish; as an employment center; and as a blend of the historic and contemporary.

In 1984, the City Council adopted the Downtown Plan, a long-range policy document intended to guide the development decisions for Downtown Scottsdale. The plan encourages Downtown to become a mixed-use center with an emphasis on the integration of historic resources, specialty retail, office, residential, restaurant and hotel uses. One of the primary components of the Downtown Plan was to create residential land uses to ensure "24-hour occupancy" in the Downtown – thus preventing the urban decay often experienced in downtown areas. Some milestone projects approved under the Downtown Plan include:

- Scottsdale Fashion Square Mall (1986)
- Marriott Hotel (1986)
- Scottsdale Financial Center Office Complex (1986)
- Scottsdale Galleria Mall (1987)
- Scottsdale Stadium Expansions (1990, 2006)
- San Marin Multi-Family Residential (1991)
- Couplet Roadway System (1991)
- Loloma Transit Center (1995)
- Medical Campus Expansion (1996-Present)
- Scottsdale Fashion Square Nordstrom Expansion (1996)

- Finova Office Headquarters (1997)
- Lincoln Towne Center Mixed-Use (1999)
- Scottsdale Waterfront Mixed-Use Commercial/Office (2003)
- Loloma/Main Street Plaza Mixed-Use Commercial/Residential (2004)
- Optima Camelview Residential (2004)
- Hotel Valley Ho/Main Street Residential (2004)
- Stetson/South Canal Mixed-Use Commercial/Office (2004)
- Rose Garden Residential (2005)
- Portales Corporate Center II Office (2005)
- W Hotel (2005)

Since 1984, the Downtown Plan and subsequent community efforts have been successful at guiding the growth, both financially and physically, of Downtown Scottsdale. Downtown's more recent successes under the plan include the addition of more than 2,500 new residential units as well as public and private development investment totaling $2 billion.

Downtown Scottsdale ranks among the major activity centers in the region. The Downtown area includes a diverse range of employment, residential, commercial, retail, entertainment, educational, civic, and cultural facilities *(Figure 2*).

- Mixed-Use – Significant infill projects have either been built recently or are planned for construction during the next five years. Public and private investment includes a mix of residential, retail and office uses. Developments with more than $10 million in private investment include: Scottsdale Waterfront, W Hotel, Main Street Plaza, Hotel Valley Ho, Third Avenue Lofts, Galleria Corporate Center, Scottsdale Oasis, Scottsdale Healthcare Osborn, Stetson Plaza/South Canal Bank Project, Main Street Residences, and Optima Camelview.

- Residential – Downtown includes a wide variety of residential units, including new development and older single-family and multi-family residential. New projects, including those listed above, are expected to result in 2,500 additional residential units over the next three years.

- Retail – The Downtown districts are known for their unique retail opportunities, and Scottsdale Fashion Square in the northwest quadrant of Downtown has approximately 1.8 million square feet of gross floor area and performs in the top 1% of all malls in the nation (gross per square foot). The Scottsdale Waterfront is currently under construction (nearing completion) and includes 1.1 million square feet of mixed-use retail, office, and residential. These combined areas are regional trip generators for tourists and residents.

- Civic – The Scottsdale Civic Center Mall lies in the southeast quadrant of Downtown and includes city offices, City Hall, the Civic Center Public Library, Scottsdale Center for Performing Arts, Scottsdale Museum of Contemporary Art (SMOCA), open space, and event gathering space. The Civic Center Mall area is also bordered by restaurants and a hotel.

- Cultural/Entertainment – Downtown Scottsdale includes such cultural attractions as the Center for the Performing Arts, the Scottsdale Historical Museum, the SMOCA and Theater 4301. Scottsdale Public Arts manages a number of outdoor art pieces throughout the Downtown area, including unique bus shelters, and sculpture. In addition, Scottsdale

Stadium is at the south end of Downtown and hosts the San Francisco Giants during Cactus League Spring Training. Downtown Scottsdale is also known for active night life with many restaurants, bars, entertainment venues, and movie theaters.

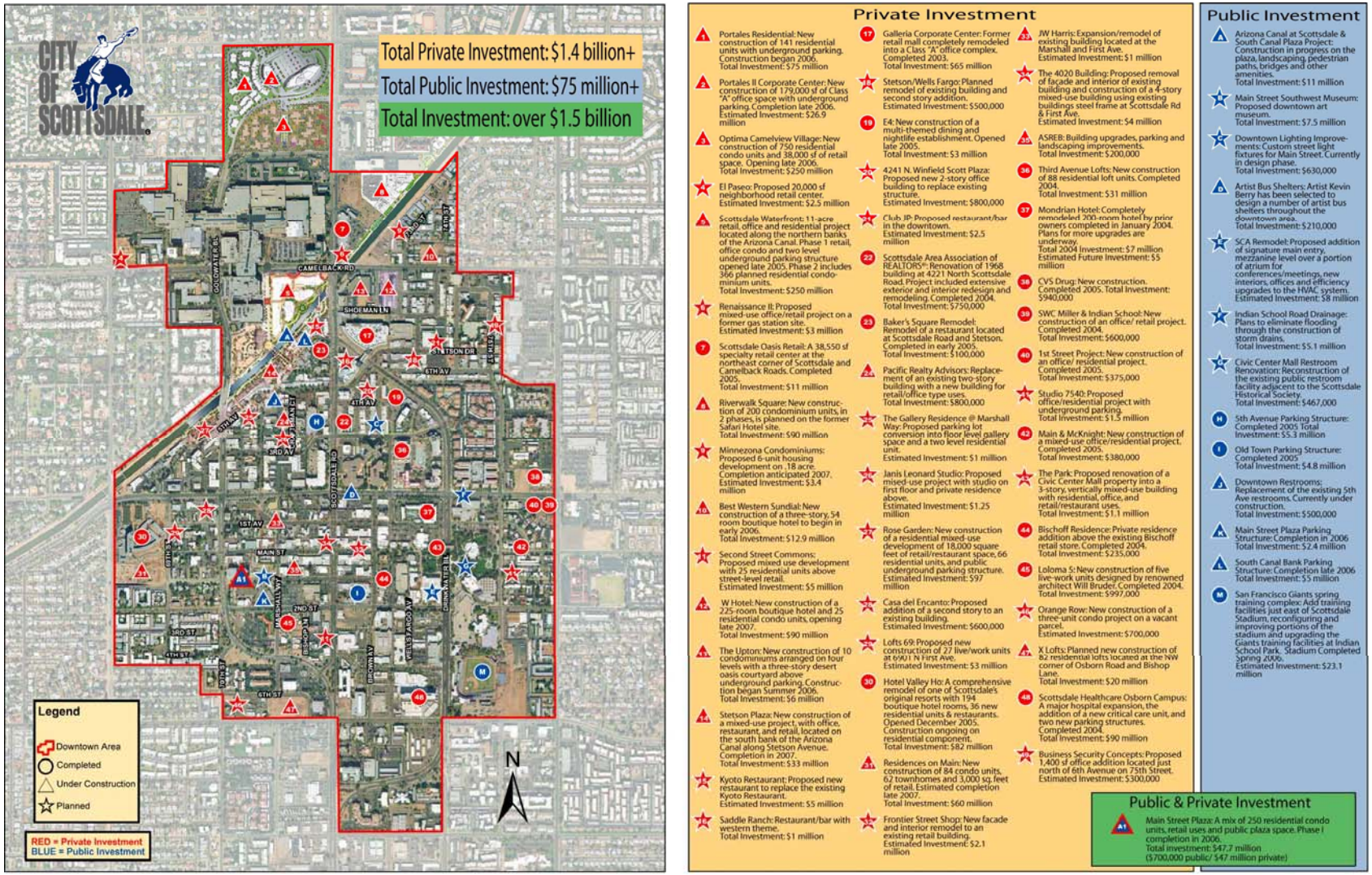
- Medical – Scottsdale Healthcare Osborn campus lies at the south end of Downtown and recently opened an expanded 55,000 square foot emergency center on site. The Scottsdale Healthcare Osborn campus employs over 3,300 and had a patient count of over 111,000 in FY 2006. Additionally, there are many supporting medical offices adjacent to the healthcare campus.

- SkySong is a 42-acre site located two miles south of Downtown Scottsdale at the southeast corner of McDowell Road and Scottsdale Road. The initial phase of the center will be completed by summer of 2008 and will include up to 300,000 square feet of research and office space with street level retail, service facilities, and a 325 unit apartment complex. It is anticipated that the full build-out of this site will include over 1 million square feet of research and office space, employment for 4,000 people, and a total of $300 million in capital investment. Entertainment and retail at SkySong are envisioned to keep the center active after 5 p.m. by providing unique live/work/play opportunities.

  Although SkySong is not within the boundary of Downtown Scottsdale and is located outside of the Central/Downtown Scottsdale Study Area, the close proximity and large scale of this project will have some impact on Downtown circulation. SkySong has the potential to serve as a southern anchor to Downtown and support development in the approximately two-mile area between the southern boundary of Downtown (Earll Drive) and SkySong (McDowell Road). The circulation impact of SkySong is being evaluated as part of the traffic modeling process used for the Scottsdale Transportation Master Plan. A transit center is planned and funded in the vicinity of SkySong.

The development of a responsive mobility plan is critical to identify and address the demand from the development projects planned or under construction. The Transportation Master Plan addresses current and future transportation issues, and presents a planned approach to transportation and mobility that incorporates the demand management issues implied by these growth trends occurring in the Central/Downtown Scottsdale area. Companion Transit, Bicycle, and Pedestrian elements are included in the Transportation Master Plan.

Figure 2: Private and Public Downtown Scottsdale Reinvestment



As of October 2006 Developed by City of Scottsdale Planning and Development Services and Economic Vitality Departments

2.2 The General Plan

The first Scottsdale General Plan was created for the City of Scottsdale by Maricopa County in 1960 and included plans for land use and streets, covering about 15 square miles south of Indian Bend Road. The City updated this plan in 1967, with several updates since that time. The most recent General Plan was adopted by the City Council in October 2001 and ratified by the citizens of Scottsdale at a March 2002 special election. The General Plan is consistent with existing land uses showing suburban neighborhoods with non-residential uses along the major roadway corridors. The McDowell Road and Scottsdale Road corridors south of Downtown Scottsdale are designated as mixed-use neighborhoods, allowing for greater flexibility in revitalization efforts and development of such projects as SkySong. The Land Use Element of the General Plan promotes land use patterns that help conserve natural resources, reduce dependence on the automobile and alleviate traffic congestion. The opportunities for this kind of land use pattern are most likely in this area of Scottsdale.

The 2001 General Plan Community Mobility Element indicates roadways as "Citywide Systems" and "Regional Systems". McDonald Drive, Chaparral Road, 64th Street, Hayden Road, Pima Road and the eastern halves of Camelback, Indian School, and Thomas roads are all designated as Citywide Systems streets. Scottsdale Road, Goldwater Boulevard, Drinkwater Boulevard, and the western halves of Camelback, Indian School, and Thomas roads are designated as Regional System roadways.

2.2.1 The Downtown Plan

In 1984, the City Council adopted the Downtown Plan, a long-range policy document intended to guide the growth and development decisions for 725 acres of Downtown Scottsdale. The plan calls for a unified strategy to raise the quality, character, marketability, and overall viability of Downtown. The plan encourages Downtown to become a mixed-use center with an emphasis on the integration of historic resources, specialty retail, office, residential, restaurant and hotel uses. For the past 20 years, the Downtown Plan has framed public policy with regard to Downtown Scottsdale. The Downtown Plan includes Land Use, Circulation, and Downtown Summary sections. "Types" of land use categories – Type 1 and Type 2, indicate degrees of developmental intensity in the Downtown. The Circulation Element of the Downtown Plan contains discussion of major and local streets, transit, easy to use pedestrian links and well located, shared Downtown parking. One important aspect of the Downtown Plan Circulation Element is the two-way couplet system (Drinkwater and Goldwater Boulevards) with each portion of which emphasizes a particular direction of travel. The couplet of Drinkwater and Goldwater Boulevards was built in accordance with the Downtown Plan Circulation Element and functions as additional access to and through Downtown Scottsdale.

2.2.2 Downtown Plan update

In 2006, a comprehensive process to update the Downtown Plan was begun. A Scottsdale Downtown Town Hall was held in November 2006 as the "kick-off event" for the update of the Downtown Plan. Approximately 100 community leaders, business owners and residents participated in three days of intense discussion and debate. The final report from this independent process recommended, among other ideas for Downtown enhancement, the widening of Chaparral, Indian School, and Thomas Roads to enhance vehicular travel to Downtown. The final report was presented to City Council in February 2007.

The Town Hall report and recommendations are only the first step in process to update the Downtown Plan by spring of 2008. While the Town Hall report and recommendations will help form the basis for some of the vision, goals and objectives to be achieved in an updated

Downtown Plan, some of the more specific recommendations regarding circulation, cultural facilities and open space planning will need to be technically analyzed and evaluated through both the Transportation Master Plan and Downtown Plan Update processes, culminating in final adoption by the City Council.

2.3 City Zoning Ordinances and Development Regulations

2.3.1 Downtown Zoning Regulations

The purpose of the Downtown (D) zoning district is to identify the Downtown area by designation, to delineate special land use subdistricts, and to formulate appropriate development standards toward implementation objectives articulated in the Downtown Plan. Specific objectives of the Downtown Plan which the D district regulations implement include:

A. Preserve and protect the character of the Fifth Avenue, Old Town and West Main districts as pedestrian-oriented shopping areas.
B. Encourage new hotel development to support specialty retailing downtown.
C. Attract new office development to sites suitable for such use.
D. Provide opportunities and incentives for residential projects and for mixed-use development.
E. Encourage historic preservation.
F. Establish incentives for underground parking and off-site parking in order to promote more efficient use of land and to improve the appearance of downtown.
G. Allow latitude for creative design and architectural variety within limits established to preserve solar access, light, and privacy and to create definitive streetscapes.
H. Encourage joint project planning by neighboring property owners.
I. Establish incentive and bonus system to obtain public amenities.

The primary purpose of the Downtown Overlay (DO) zoning district is to create new opportunities for the development or expansion of properties that do not have D (downtown) zoning. The DO (downtown overlay) also provides additional regulations for properties with and without Downtown zoning. Specific objectives of the downtown overlay include:

A. Simplify parking regulations to ease the Downtown development process.
B. Provide incentives for new buildings, remodels, for buildings with new tenants, or for building area expansions of smaller Downtown businesses.
C. Allow for more residences in Downtown.
D. Maintain a mixture of land uses to keep Downtown vital in the day and night.
E. Minimize the impact of bars, after hours establishments, tattoo and related businesses and other similar uses on neighboring properties.
F. Enhance the nature of Downtown by encouraging uses that cater to all ages and by requiring greater oversight of potentially detrimental uses.
G. Assure consistent regulation of design and architecture throughout downtown.

2.4 Population and Growth Trends

By 2030, Central/Downtown Scottsdale's current population of 64,400 residents[1] is projected to increase by 12 percent to about 72,000. The area is expected to remain as the most densely populated area of the City, with the concentration of this density located in Downtown. In addition, employment is expected to increase during that time making this the second largest Scottsdale employment center after the Scottsdale Airpark. As of the 2005 Special Census, approximately 1,600 businesses and 21,000 jobs are located in southern Scottsdale.

[1] 2005 Special Federal Census

The Scottsdale City Council has made revitalization of the southern Scottsdale area (including the study area) a major priority. Southern Scottsdale has enjoyed a combined private and public investment of over $3 billion since 2003 (over $2 billion in Downtown).

Investment Activity in Southern Scottsdale

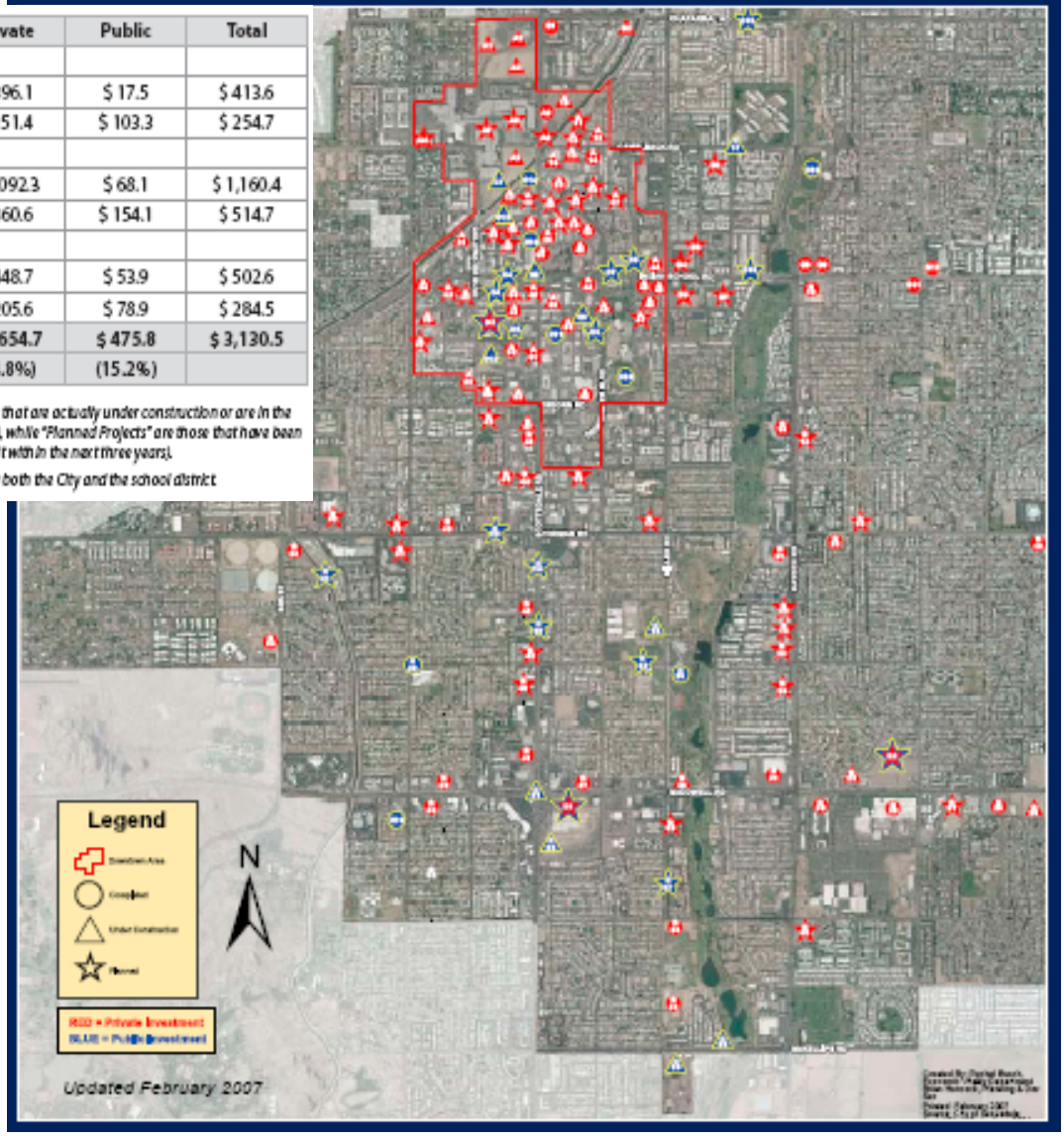
January 2003 - January 2007

($100,000 or Greater Investment)

	Private	Public	Total
Completed Projects			
Within downtown:	$ 396.1	$ 17.5	$ 413.6
Balance of area:	$ 151.4	$ 103.3	$ 254.7
Projects in Process			
Within downtown:	$ 1,092.3	$ 68.1	$ 1,160.4
Balance of area:	$ 360.6	$ 154.1	$ 514.7
Planned Projects			
Within downtown:	$ 448.7	$ 53.9	$ 502.6
Balance of area:	$ 205.6	$ 78.9	$ 284.5
Total:	**$ 2,654.7**	**$ 475.8**	**$ 3,130.5**
**in millions*	(84.8%)	(15.2%)	

Note: The "Projects in Process" category includes projects that are actually under construction or are in the City approvals process (zoning or building permits), while "Planned Projects" are those that have been announced only (most of which are likely to be built within the next three years).

The Public category includes investments made by both the City and the school district.



3.0 EXISTING AND FUTURE CONDITIONS

3.1 Streets and Circulation

The existing traffic conditions analysis presented in this report is based on traffic forecasts prepared by the Maricopa Association of Governments (MAG). Socioeconomic data, such as population and employment projections, provide key inputs into the model, which uses data developed in 2006, based on the 2005 U.S. Special Census survey.

3.1.1 Regional Area Street Network

The north-south corridors are well defined in this area of the Valley. The Loop 101 Freeway is the main regional roadway for this area with daily volumes exceeding 100,000 vehicles. Scottsdale Road, Hayden Road, and Pima Road are all north-south arterial roadways that also accommodate regional traffic.

The major east-west corridors in this area are not as well established. Between Shea Boulevard and the Loop 202 Freeway the primary regional roadways are Lincoln Drive, Camelback Road, Indian School Road, Thomas Road, and McDowell Road. Lincoln Drive and Camelback Road extend west through Paradise Valley and the City of Phoenix to connect to other regional north-south corridors such as the Piestewa Freeway; however, they do not connect to the Loop 101 Freeway in the east. Indian School Road, Thomas Road, and McDowell Road all connect the 101 Freeway to the major north-south corridors to the west; however, this leaves a six-mile wide section between Shea Boulevard and Indian School Road with no continuous major east-west roadways.

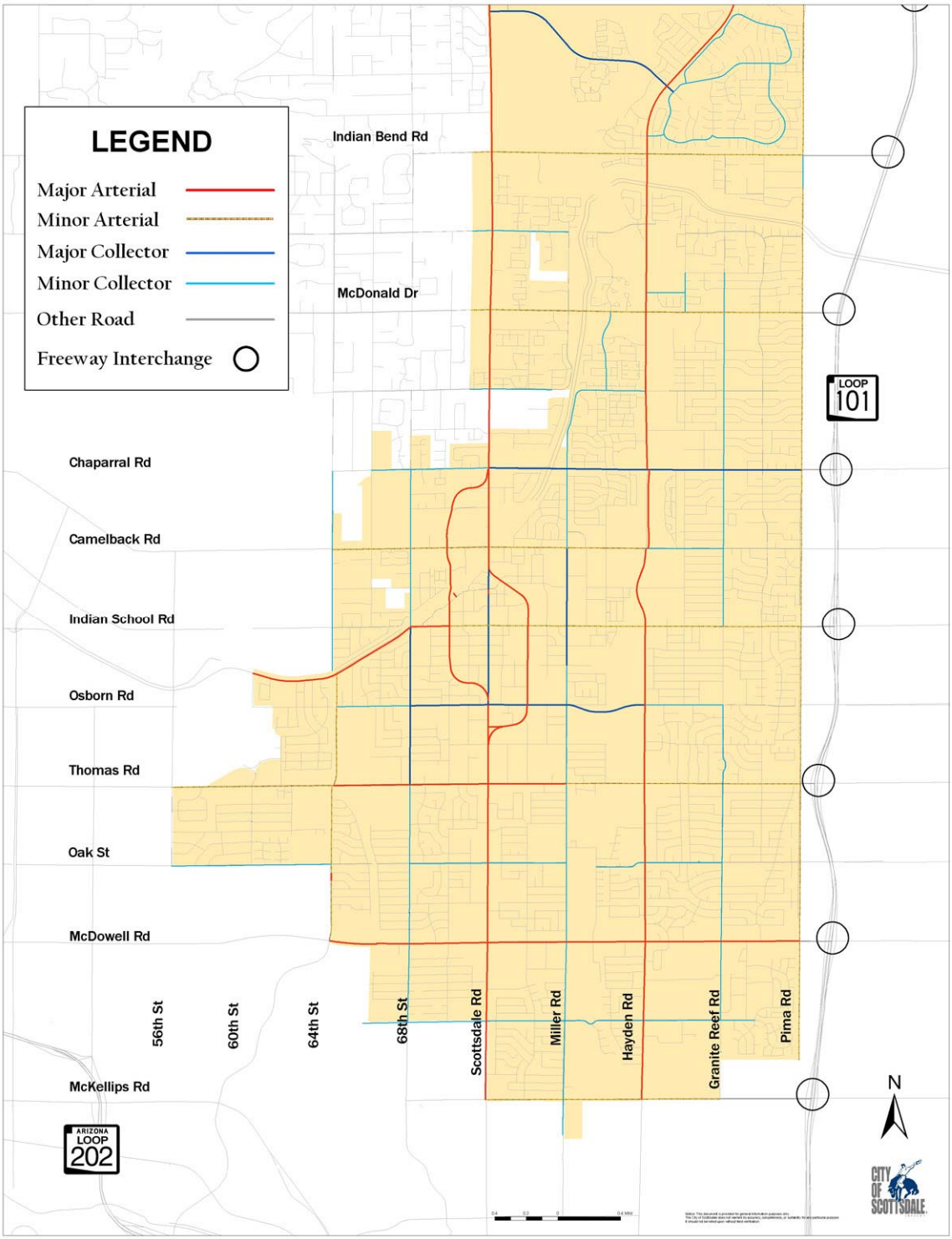
Portions of the Central/Downtown Scottsdale area can be considered one of Scottsdale's "cores" (the Airpark area is another key core). Freeways are located nearby on the southern (202) and eastern (Loop101) edges of the core. The community is not bisected nor isolated by these freeways. Scottsdale's street network connects to these freeways via east-west and north-south arterial roadways, for the most part on a mile grid.

3.1.2 Local Area Street Network

In the immediate area, the east-west section line streets McDonald Drive, Chaparral Road, and Indian School Road, all have interchanges on the Loop 101 Freeway. Chaparral Road and Indian School Road both extend to the east serving the Salt River Pima-Maricopa Indian Community. McDonald Drive extends west of Scottsdale Road into Paradise Valley, but not as a major street. Similarly, Chaparral Road also extends west of Scottsdale Road, but not as a major street. Indian School Road is the only street that continues as a major street west of Scottsdale Road.

The half mile east-west streets in the immediate area consist of Jackrabbit Road, Camelback Road, and Osborn Road. All of these roadways are somewhat discontinuous; none of them connect Scottsdale Road to Pima Road. Both Camelback Road and Osborn Road connect Scottsdale Road to Hayden Road; Jackrabbit Road does not connect across the Arizona Canal.

Figure 3: Existing Roadway Network



3.1.3 Residential Frontage

Most of the major east-west streets in the study area have some segments with direct residential frontage. The term "direct frontage" implies that the building orientation and front yard face the street.

- There are thirty-two townhouses between 82nd Street and Granite Reef Road with their direct frontage on McDonald Drive. There were 19 single family houses removed along McDonald Drive between Pima Road and 86th Street to accommodate a roadway widening project along this section.
- There are 62 townhouses between 82nd Street and 85th Street with direct frontage along Chaparral Road. There are twenty-seven single family houses between 85th Street and Pima Road with direct frontage along Chaparral Road. All of the single family houses and most of the townhouses along this section of Chaparral Road are separated from the roadway by a frontage road; however, there are twenty-three townhouses between Granite Reef Road and 85th Street that do not have a frontage road. There are 52 townhouses between Miller Road and 78th Street with direct frontages, including driveways, along Chaparral Road.
- There are 22 single family houses between 81st Street and Granite Reef Road with direct frontage along Indian School Road; these houses are separated from the roadway by a frontage road.
- There are 17 single family houses between Miller Road and Indian Bend Wash with direct frontage along Thomas Road. There are 36 single family houses between Granite Reef Road and 87th Street with direct frontage along Thomas Road; these houses are separated from the roadway by a frontage road.
- There are 52 townhomes between Miller Road and 78th Street with direct frontage on Chaparral Road.

The half-mile streets in this area all have single family homes or townhouses with direct frontage. There are elementary schools on both Camelback Road and Osborn Road.

Single family residential having direct roadway frontage can create issues of neighborhood livability for homeowners and residents. Traffic levels, access, and roadway noise are often cited as impacting residents' quality of life. In circumstances where a roadway may need to be widened special care must be taken to enhance rather than detract from the surrounding neighborhood. The Policy Element of the Transportation Master Plan recommends a minimum buffering distance from homes on roadways in order to enhance neighborhood preservation and livability when roadway widening may be necessary.

3.2 Traffic Data

The City's Traffic Engineering Division collects traffic volume data on all major street segments and at all major intersections in the city. This data is published every two years along with collision data. In addition to the traffic volume data collected by the City, Otak consulting firm was contracted to do an evaluation of Downtown circulation. The findings of the Otak study are incorporated into the Central/Downtown area circulation study of the Transportation Master Plan.

3.2.1 Downtown traffic data study

Data presented in the March 2006 Draft of the Scottsdale Road, Downtown Circulation Study prepared by Otak, include:

- An evaluation of 22 intersections in the Downtown Scottsdale area found that all signalized intersections operate at Level of Service (LOS) D or better, which means the average delay is less than 55 seconds per vehicle during daily peak a.m. and p.m. periods. This average delay per vehicle is less than half the typical cycle length in Downtown at the signalized intersections, thus anyone having to wait through more than one red light is unusual. (Cycle lengths are 120 seconds at Indian School and Scottsdale Roads and 102 seconds at other signals in the Downtown area.) Of the 22 intersections analyzed, 17 operate at LOS C or better (less than 35 seconds of delay). LOS D is the generally accepted standard for traffic operations in an urban area and the goal set in the adopted Streets Master Plan.

- During the peak hours, over half of the traffic (64 percent of the 8345 vehicles during the morning peak and 57 percent of the 9380 vehicles during the evening peak) entering Downtown remains in the area for the duration of the peak period. The proportion of traffic from each direction that enters and stays in Downtown Scottsdale during peak periods is listed below:

    - 75 percent of the 3340 vehicles in the a.m. and 73 percent of the 2645 vehicles in the p.m. traffic that enters the Downtown from the east (Chaparral, Camelback, Indian School, and Osborn Roads) remains in the area.
    - 65 percent of the 1835 vehicles in the a.m. and 58 percent of the 2405 vehicles in the p.m. traffic that enters the Downtown from the south (68th Street, Scottsdale and Miller Roads) remains in the area.
    - 58 percent of the 1725 vehicles in the a.m. and 47 percent of the 2875 vehicles in the p.m. traffic that enters from the west (Chaparral, Camelback, and Indian School Roads) remains in the area.
    - 45 percent of the 1445 vehicles in the a.m. and 43 percent of the 1455 vehicles in the p.m. traffic that enters from the north (Scottsdale Road) remains in the Downtown.

- Extrapolating the data to a 24-hour period indicates that 156,000 vehicles enter the Downtown area (from 2004 City of Scottsdale counts, the latest available at the time of the study). Approximately 94,000 or about 60 percent had destinations in the Downtown area, while the other 62,000 constituted pass-through traffic.

3.2.2 Traffic data for east/west streets

For this study and to prepare the analysis of Chaparral Road for the City Council in May, historic traffic data was reviewed for the McDonald Drive, Camelback Road, Indian School Road and Thomas Road corridors. For the 1986-2006 period, average vehicle per day counts grew by 20% on McDonald Drive, 62.5% on Indian School Road and 31.5% on Thomas Road. As with Chaparral Road, each of these corridors is connected to a freeway interchange. Over the same 20-year period, volumes dropped by 23.4% on Camelback Road, which does not connect to Pima Road or the Loop 101 Freeway. Further review of changes in traffic volumes on nearby east-west corridors connected to the Loop 101 Freeway shows that growth in travel demand east of Hayden Road has been substantially greater. In large part, this is likely due to the fact that both Camelback Road and Osborn Road each provide four additional travel lanes for east-west travel on the west side of Hayden Road heading into the Downtown area. Among the corridors connected to the freeway, Indian School Road has become the main conduit to and from Downtown Scottsdale. The greater growth in traffic volumes along Indian School is likely due to its more direct access to the Loop 101 and to the fact that traffic flow has been improved

through widening of the Hayden Road intersection and the installation of intelligent transportation system (ITS) features.

East- West Traffic Volumes						
	West of Hayden Rd.		***% Change***	***East of Hayden Rd.***		***% Change***
Street	**1986**	**2006**	**1986 to 2006**	**1986**	**2006**	**1986 to 2006**
McDonald	17,500	21,000	20%	14,000	19,100	36.4%
Chaparral	14,800	18,900	27.7%	14,800	30,900	108.8%
Camelback	26,500	20,300	-23.4%	no counts – local residential street	no counts – local residential street	no counts – local residential street
Indian School	25,600	41,600	62.5%	17,500	38,200	118.3%
Thomas	26,000	34,200	31.5%	18,600	30,100	61.8%

The general trend for traffic volumes in the southern portion of the City has been increases in volumes in the main east-west corridors and decreases in volumes for the main north-south corridors over the past ten years. This reflects a change in travel patterns due to the construction and opening of Loop 101. The freeway has been used for north and south travel, with more drivers traveling east and west to get to and from the freeway. Figures for the roadway segments east of Hayden Road indicate the greatest increases in traffic volumes.

3.3 Circulation Issues

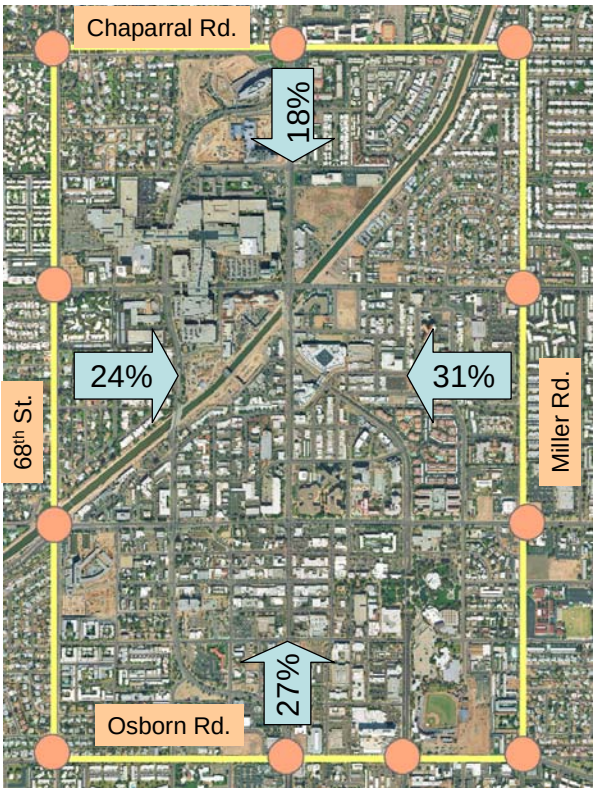
The following traffic circulation issues have been identified for the Central/Downtown area:

- Access to Downtown
- Circulation within Downtown
- The role of the couplet (Drinkwater and Goldwater Boulevards) in relation to the functioning of a larger and more vibrant Downtown core; whether it is sized appropriately; and whether it should continue to be focused on auto movement.
- The role and character of Scottsdale Road in the Downtown core, particularly given plans and policies supporting a greater role for non-automobile modes in this part of the city.
- Potential implementation of high capacity transit (HCT) in the Scottsdale Road corridor. Transit technologies (Bus Rapid Transit, Light Rail Transit, Modern Streetcar) are under evaluation as part of the HCT Study of the Transportation Master Plan.

3.4 Access into Downtown

Recent intersection counts have been examined to assess the directional splits for access into the Downtown area bounded by Miller Road, Osborn Road, 68th Street and Chaparral Road. Based on these counts, approximately 31% of traffic enters the Downtown area from the east (on Chaparral, Camelback, Indian School, and Thomas Roads), 27% from the south (on 68th Street, Goldwater, Scottsdale Road, Drinkwater, and Miller Road), 24% from the west (on Camelback, Indian School, and Thomas Roads) and 18% from the north (on 68th Street, Goldwater, Scottsdale Road, Drinkwater, and Miller Road). *(Figure 4)*

Figure 4: Downtown Access Directional Splits



On a typical day, approximately 24% of the traffic crossing Miller Road from the east uses Chaparral Road. This analysis shows that Chaparral does not by itself have a significant role in Downtown access, thus modifications to the roadway will have minimal impact on Downtown vitality.

3.5 Forecast 2030 Traffic

Based on forecasts, traffic with destinations in or passing through the Downtown area is estimated to grow by about 30 percent by the year 2030. The table below shows the range of traffic volumes for all segments of each roadway listed for 2006 actual counts and 2030 forecast traffic volumes.

Table 2 Traffic Volumes

Road	From	To	2006 Daily Trips	2030 Forecast Daily Trips
Thomas Road	56th Street	64th Street	28,200 vpd	33,000 vpd
	64th Street	Scottsdale	32,000 vpd	36,700 vpd
	Scottsdale	Miller	27,700 vpd	31,700 vpd
	Miller	Hayden	30,600 vpd	33,800 vpd
	Hayden	Pima	33,300 vpd	36,900 vpd
Osborn Road	64th Street	68th Street	5,800 vpd	vpd
	68th Street	Scottsdale	7,000 vpd	6,800 vpd
	Scottsdale	Drinkwater	10,000 vpd	8,900 vpd
	Drinkwater	Miller	14,400 vpd	16,600 vpd

	Miller	Hayden	15,800 vpd	19,000 vpd
	Hayden	82nd Street	2,800 vpd	3,900 vpd
	82nd Street	Granite Reef	3,300 vpd	4,400 vpd
Indian School Road	64th Street	68th Street	26,200 vpd	36,500 vpd
	68th Street	Goldwater	34,500 vpd	41,600 vpd
	Goldwater	Scottsdale	20,600 vpd	23,800 vpd
	Scottsdale	Drinkwater	23,100 vpd	24,600 vpd
	Drinkwater	Hayden	34,400 vpd	37,200 vpd
	Hayden	82nd Street	34,700 vpd	39,200 vpd
	82nd Street	Granite Reef	35,600 vpd	39,600 vpd
	Granite Reef	Pima	39,800 vpd	46,400 vpd
Camelback Road	64th Street	66th Street	34,000 vpd	38,200 vpd
	66th Street	Scottsdale	29,500 vpd	33,400 vpd
	Scottsdale	Miller	21,500 vpd	24,300 vpd
	Miller	Hayden	22,800 vpd	27,800 vpd
	Hayden	Granite Reef	6,500 vpd	8,400 vpd
Chaparral Road	66th Street	Scottsdale	5,600 vpd	6,400 vpd
	Scottsdale	Miller	15,600 vpd	17,500 vpd
	Miller	78th Street	15,500 vpd	16,700 vpd
	78th Street	Hayden	18,900 vpd	20,800 vpd
	Hayden	Granite Reef	22,200 vpd	24,300 vpd
	Granite Reef	Pima	26,200 vpd	30,000 vpd
McDonald Drive	City limits	Scottsdale	14,900 vpd	17,100 vpd
	Scottsdale	78th Street	18,800 vpd	21,400 vpd
	78th Street	Hayden	20,500 vpd	23,600 vpd
	Hayden	Granite Reef	17,600 vpd	22,000 vpd
	Granite Reef	Pima	22,800 vpd	28,600 vpd
68th Street	Continental/ Roosevelt	McDowell	6,100 vpd	6,500 vpd
	McDowell	Thomas	10,200 vpd	11,300 vpd
	Thomas	Indian School	15,300 vpd	15,900 vpd
	Indian School	Camelback	12,000 vpd	13,300 vpd
	Camelback	Chaparral	6,900 vpd	6,800 vpd
Goldwater Blvd	Scottsdale	Indian School	14,800 vpd	17,300 vpd
	Indian School	Camelback	26,000 vpd	29,200 vpd
	Camelback	Scottsdale	13,000 vpd	14,900 vpd
Scottsdale Road	Thomas	Earll	44,300 vpd	49,500 vpd
	Earll	Osborn	35,600 vpd	39,400 vpd
	Osborn	Indian School	22,700 vpd	24,700 vpd
	Indian School	Drinkwater	20,100 vpd	21,100 vpd
	Drinkwater	Camelback	33,200 vpd	36,000 vpd
	Camelback	Chaparral	40,000 vpd	42,700 vpd
	Chaparral	McDonald	50,000 vpd	51,000 vpd
Drinkwater Blvd	Scottsdale	Osborn	9,200 vpd	10,400 vpd
	Osborn	Indian School	14,100 vpd	16,100 vpd
	Indian School	Scottsdale	11,100 vpd	13,600 vpd
Miller Road	Thomas	Osborn	11,000 vpd	12,000 vpd
	Osborn	2nd Street	12,400 vpd	14,400 vpd
	2nd Street	Indian School	11,300 vpd	12,500 vpd
	Indian School	Camelback	15,100 vpd	15,200 vpd
	Camelback	Chaparral	8,800 vpd	8,700 vpd
Miller/ Jackrabbit	Chaparral	Hayden	3,500 vpd	4,300 vpd

Hayden Road	Thomas	Indian School	32,700 vpd	37,200 vpd
	Indian School	Camelback	29,700 vpd	32,800 vpd
	Camelback	Chaparral	35,800 vpd	36,700 vpd
	Chaparral	McDonald	34,200 vpd	35,600 vpd
Granite Reef Road	Thomas	Osborn	1,300 vpd	2,600 vpd
	Indian School	Camelback	3,600 vpd	5,600 vpd
	Camelback	Chaparral	5,300 vpd	5,000 vpd
	Chaparral	McDonald	4,100 vpd	4,500 vpd
Pima Road	Thomas	Indian School	8,200 vpd	17,700 vpd
	Indian School	Chaparral	7,000 vpd	14,300 vpd
	Chaparral	McDonald	9,000 vpd	15,500 vpd

3.6 Forecast Access to Downtown

3.6.1 Loop 101 to Downtown

The travel corridor between Loop 101 and the Downtown area is forecasted to increase from 2006 volumes. A review of current travel demand patterns, indicates that 75 percent of westbound traffic is destined for Downtown (see section 3.3.1), combined with the expected growth, highlight the need to improve roadway capacity between the Loop 101 freeway and Downtown.

McDonald Drive, Chaparral, Camelback, Indian School, Osborn, and Thomas Roads provide a total of 22 through lanes between Hayden and Scottsdale Roads, and constitute the main access routes to the Downtown area from the east. On these six streets, traffic volumes are currently estimated to increase from a total of approximately 146,200 vpd in 2006 to a total of 164,400 vpd in 2030 (a 13% increase) on the highest forecast segments between Hayden Road and Pima Road and from approximately 126,600 vpd to 158,950 vpd (a 25% increase) on the highest forecast segments between Scottsdale Road and Hayden Road.

Four of these streets, McDonald, Chaparral, Indian School, and Thomas Roads, also provide direct access to Loop 101, Indian School Road provides direct access to Downtown, while McDonald Drive, Chaparral Road and Thomas Road serve the north or south ends of the Downtown. The total volume on these four roadways between Pima Road and Granite Reef Road in 2006 was 112,900 vpd. The 2030 forecast at the same location is 150,900 vpd, an increase of 33 percent.

In addition to the vehicular-based assessment of travel demand, the magnitude of mobility needs may be presented from the perspective of person-trips. Assuming an average occupancy of 1.2 persons per vehicle, which has been the regional trend, person trips are expected to increase by over 50 percent on these four roadways, or from 103,800 to 162,840. These observations support the need for multi-modal transportation, such as public transit, bicycling and walking, to preserve today's standard of service in the corridor.

3.6.2 Loop 202 to Downtown

Traffic in the corridor between Loop 202 and the Downtown area, which includes 64th Street, 68th Street, Scottsdale Road, Miller Road, Hayden Road, and Pima Road, has an existing volume to capacity ratio of 0.66. The traffic is forecast to increase around 25 percent by the year 2030, increasing the volume/capacity ratio to 0.75. Thus, even with the growth there is

sufficient capacity in the corridor to accommodate future traffic. Therefore, no street widening is being considered in this area of the City in the development of the Transportation Plan.

3.7 Downtown North-South Traffic Flow

Downtown north-south traffic flow considers traffic operations on Scottsdale Road and the Goldwater/Drinkwater Boulevard Couplet through Downtown Scottsdale, between Thomas Road and Chaparral Road. In the late 1970s, the City Council voted to build the Goldwater/Drinkwater Couplet in lieu of a proposed widening to six lanes on Scottsdale Road between Osborn and Camelback Roads, with the intention of accommodating expansion of the Downtown area and concurrently preserving the existing buildings along Scottsdale Road. The Couplet concept was approved with the 1984 Downtown Plan. The Couplet was completed in 1991. Lane configurations for Goldwater and Drinkwater Boulevards are five through-traffic lanes on each roadway with:

- Goldwater Boulevard: 3 southbound and 2 northbound lanes.
- Drinkwater Boulevard: 3 northbound and 2 southbound lanes.

In 2006, Scottsdale Road and Drinkwater and Goldwater Boulevards carried 71,000 vpd north of Indian School and 66,000 vpd south of Indian School. In both cases Scottsdale Road carried nearly 50 percent of the traffic even though it has only 29 percent of the lanes (four of the total of fourteen through travel lanes).

The transitions from Goldwater Boulevard and Drinkwater Boulevard to Scottsdale Road present some design issues for bicycles and pedestrians. These transitions will be examined and recommendations for possible enhancements will be included in the opportunities and recommendations section as well as in the Bicycle and Pedestrian elements of the Transportation Master Plan.

3.8 Pedestrian Facilities

Since the adoption of the City of Scottsdale Bicycle/Pedestrian Transportation Plan in January 1995, many of the action items of this plan have been implemented, including: extensive renovations and improvements to the pedestrian environment Downtown, improvements to signals and crosswalks, and support of the Safe Routes to School program. The Transportation Master Plan will update this plan in a new Pedestrian Element. Of particular importance is creating a comfortable pedestrian environment and ensuring connections from the main existing corridors (Indian Bend Wash Path and the Canal system) to residential areas and destinations like schools, parks, the Civic Center, and commercial uses Downtown.

3.8.1 Pedestrian and Bicycle Plans and Policies

Pedestrian and bicycle issues have been identified and addressed either at the regional or local level in the following plans:

- **Design Standards and Policies Manual 2007 Update (DSPM)**
  This manual is designed to assist the public and private sectors though the land development and construction process. The standards and policies included in this manual supplement the various regulations in Scottsdale including the zoning codes, building codes, and subdivision ordinances. Chapter 5, Transportation, addresses pedestrian facilities and bikeways. The pedestrian facilities section addresses safety, connections, and accessibility (including curb ramps). The Bikeway section (and multi-

use paths) provides information that emphasizes planning, design, traffic controls, bike parking and bikeway maintenance.

- **Standard Details**
  The Uniform Standard Specifications and Details for public works construction sponsored and distributed by MAG along with the City of Scottsdale Supplements to the MAG Specifications and Details are the standards and details for public works construction in the City of Scottsdale. The City prepares and adopts Supplements to MAG Uniform Standard Specifications and Details to provide the highest quality of construction within the public right-of-way.
- **City of Scottsdale Bicycle/Pedestrian Transportation Plan (January 1995)**
  This plan developed recommendations to improve facilities for bicycling and walking. The plan's recommendations are grouped into four areas: planning and implementation; design and standards; safety, education, and enforcement design; and economics. Four levels of implementation were identified within the plan, each with an associated cost. Most of the projects identified have been implemented.
- **MAG Pedestrian Area Policies and Design Guidelines (2005)**
  The Maricopa Association of Government (MAG) Pedestrian Area Policies and Design Guidelines were recently updated in 2005. This document includes information on pedestrian facilities and standards, appropriate to a range of pedestrian areas.
- **MAG Pedestrian Plan 2000**
  The MAG Pedestrian Plan 2000 includes a study of latent demand and roadside conditions. The plan identifies Downtown Scottsdale and the city's resort corridor as areas with some of the highest demand for pedestrian facilities in the region.
- **Downtown Pedestrian Mobility Study (2007)**
  The City completed a MAG funded pedestrian mobility study within its Downtown early in 2007. This study identified key pedestrian routes and made recommendations to improve pedestrian circulation within the Downtown.
- **Scottsdale Road Streetscape Design (underway)**
  In 2005, the city initiated a streetscape project for Scottsdale Road. This project includes the redesign of the Scottsdale Road streetscape to make it more attractive and pedestrian-friendly.
- **Streetscape Design**
  In the last three years, design projects for enhanced streetscapes along Indian School Road Thomas Road, and McDowell Road have been initiated. The McDowell Road streetscape has been implemented along the majority of McDowell within Scottsdale. The Indian School Road and Thomas Road projects are pending the recommendations of the Transportation Master Plan regarding potential widening of these roadways.
- **Downtown Plan Circulation Element**
  This plan is described in the Downtown Plan section (2.2.3) of this report. The Downtown Plan Circulation Element includes a bicycle route system that will be updated through the Bicycle Element of the Transportation Master Plan.

3.8.2 Latent Pedestrian Demand

One of the indicators of the intensity of pedestrian activity is a latent demand study, which examines the locations of pedestrian generators relative to streets or other geographic features; pedestrian generators produce latent demand.

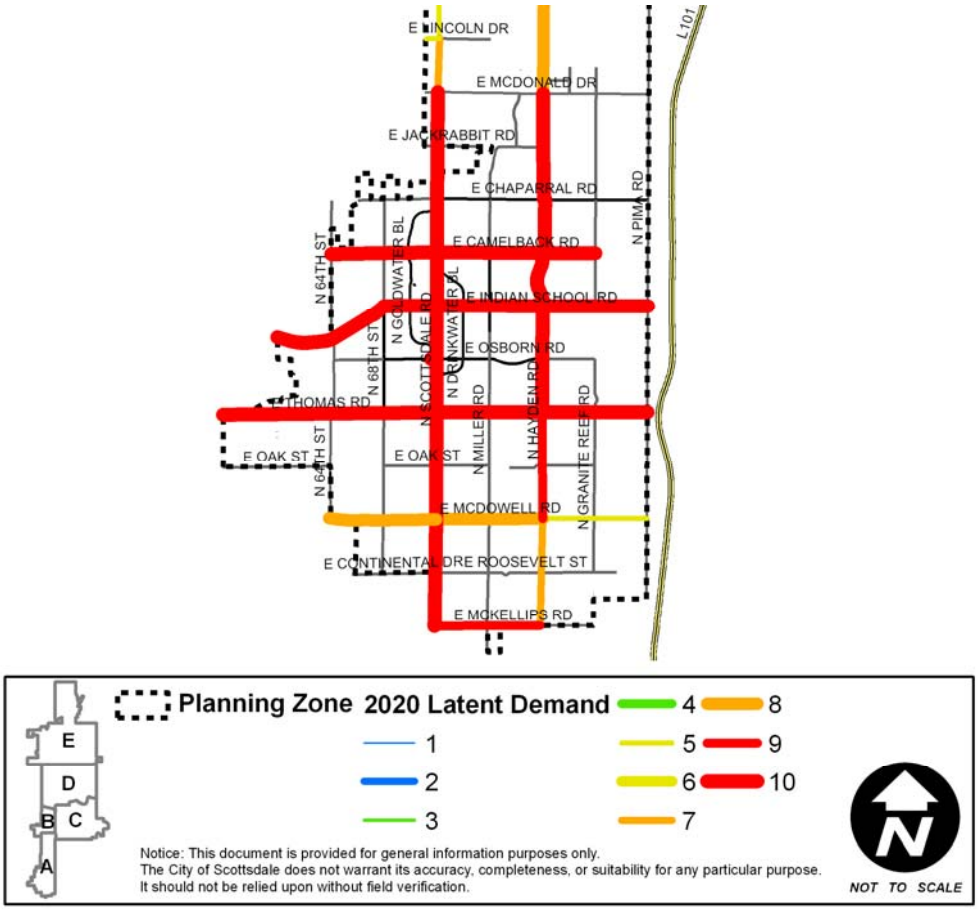
A preliminary draft latent pedestrian demand study completed as part of the Transportation Master Plan shows that the highest demand for pedestrian facilities within the City is focused in Central/Downtown Scottsdale, especially Camelback, Indian School, Thomas and Scottsdale

Roads. All of these major arterials have received rankings of 10, the most conducive for pedestrian activity *(Figure 5)*.

Other broad issues and considerations that involve latent pedestrian demand and improving pedestrian facilities in the Central/Downtown area are (for specific recommendations see section 5.2.3):

- Downtown pedestrian improvements
  - Mid-block pedestrian crosswalks (supplemented by pedestrian crossings at the locations of the highest pedestrian generators)
  - Pedestrian-oriented traffic signals
- Provide for pedestrian comfort
  - Shade through tree canopy or building facades to create overhangs;
  - Complementary street furniture, strategically placed to provide safety buffers between vehicular traffic and pedestrians;
  - Way-finding and lighting between the different Downtown districts.
- Scottsdale Road is identified as a potential high capacity transit (HCT) corridor.

Figure 5: Latent Pedestrian Demand (Central/Downtown Area)



3.8.3 Existing Conditions: Sidewalks and Curb Ramps

Sidewalks are typically provided on all arterial, collector, and local streets in Central/Downtown Scottsdale. Scottsdale requires a minimum sidewalk width of six feet citywide and prefers an eight foot sidewalk width in high use areas. The city requires sidewalks to be a minimum of five feet from the back of curb (eight feet in areas with high vehicular traffic volumes). The exception to this setback rule is when a sidewalk is adjacent to a bus stop or in urbanized areas, (described further in the Pedestrian and Streets elements) where wider back of curb sidewalks may be preferred.

To enhance the connectivity and safety of the pedestrian environment, the City encourages reducing curb cuts, providing through-pedestrian access from cul-de-sacs and dead ends, across drainage easements, and between commercial developments to destinations and to improve pedestrian access and safety by requiring the use of directional ramps at all intersections. The city has also taken substantial steps to improve curb ramp facilities.

Central/Downtown Scottsdale area includes focus on the following areas for bicycle and pedestrian facilities: 1) Historic and older neighborhoods located south of Indian School Road and east of the Downtown; 2) Newer residential; and 3) Downtown Scottsdale with its well-established base of significant retail, entertainment and tourist attractions, residential and government office uses. Each area has evolved and grown over time to acquire a unique identity, and, equally important, to merge edges to constitute a larger bicycle/pedestrian-oriented environment.

The 1998 Circulation portion of the Downtown Plan identified key pedestrian/bicycle linkages. These include Scottsdale Road, Brown Avenue, Main Street, Stetson Drive, 5th Avenue and Marshall Way within Downtown. Since the development of the Downtown Plan, an additional pedestrian link across the Arizona Canal has been established with the construction of a bridge at Marshall Way. Within the Central Scottsdale area, the Arizona Canal and Indian Bend Wash are also identified as a multiple use paths that provide non-motorized access. Based on a current latent demand study, this study recommends additional pedestrian improvements, such as wider sidewalks, greater pedestrian access, and directional curb ramps.

3.9 Bicycle Networks

The City of Scottsdale has recently updated its bicycle facilities map, with the inclusion of extensive bicycle facility guidelines. MAG is also in the process of developing a regional bicycle plan. The city's map, existing standards and policies, and the regional plan are the starting point for the development of an updated citywide bicycle element to be completed as part of this Transportation Master Plan.

3.9.2 Existing Conditions: Routes/Paths/Facilities

The city implements a range of standards for on- and off-street bicycle facilities. Prior plans and practice encourage both on- and off-street bikeways on a one-half mile grid south of Shea Boulevard, a one-mile grid between Shea Boulevard and the CAP Canal, and a two-mile grid north of the CAP Canal. Major arterials, minor arterials, major collectors, minor collectors, and certain special neighborhood and rural streets have typical cross-sections that include four-foot to six-foot bicycle-lanes, depending on parking.

The mileages of the component parts of the City's entire existing bicycle network are as follows:

- Bike Lanes = 86 miles
- Paved Shoulders = 10 miles
- Bike Routes = 50 miles
- Paved Paths = 61 miles
- Unpaved Trails = 268 miles

The city's zoning ordinance requires bicycle parking at all businesses within 50 feet of the building entrance, except in Downtown where less than forty (40) regular automobile parking spaces are required. The quantity of bicycle parking required is based on the number of vehicle spaces. The City has recently updated its bicycle map, which shows the City's current bicycle facility network as well as other pertinent bike-related information. The MAG Regional Bikeway Master Plan, which will be approved soon, will set regional goals and provide bicycle program, policy, and guideline recommendations for local member jurisdictions, including Scottsdale.

While older off street path bicycle facilities may be eight feet wide, in accordance with the standards in place at the time they were constructed, new off-street bicycle facilities within the city are to be built as multi-use paths with a minimum width of ten to twelve feet.

Current Central/Downtown bikeway issues are:

- Providing an east-west connection from Downtown to the Indian Bend Wash (outside of Downtown, the Indian Bend Wash has bicycle connections every mile)
- The Indian School/Lafayette on-street bicycle route stops at Downtown Scottsdale
- The Chaparral Road bike route stops on the east side of the Arizona Canal
- Goldwater and Drinkwater Boulevards do not currently have bicycle facilities
- Adopted Downtown Plan bicycle route

3.10 Transit Service

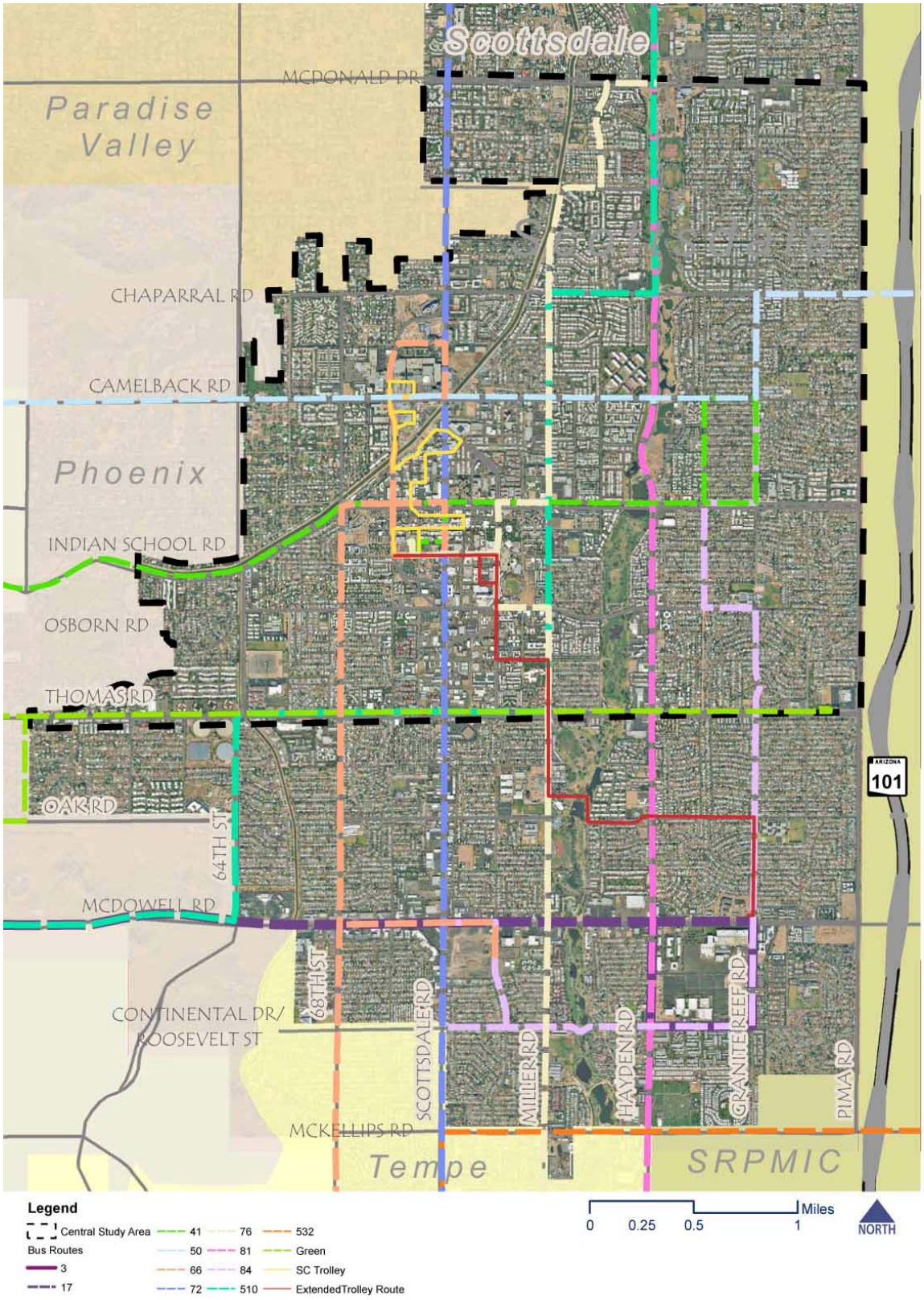
Existing transit service in Central/Downtown Scottsdale is characterized by: fixed route bus service operating on the arterial and collector grid system, with most of the bus routes in Central/Downtown Scottsdale connecting to other jurisdictions *(Figure 6*); and local and neighborhood circulator routes connecting directly to and circulating around Downtown. In general, fixed routes operate from 5 a.m. to midnight (earlier on some routes) on weekdays and 7 a.m. to 10:00 p.m. (earlier on some routes) on weekends, and circulator routes operate year-round at higher frequencies and varying hours. Further detail is provided in Table 1.

Table 3
Existing Central/Downtown Area Transit Service (as of July, 2007)

Route	Name	Headway		
		Weekday (Peak/Off-Peak)	Saturday	Sunday
Local Bus				
Green	Thomas	20/40	30	30
41	Indian School	15*/30	30	30
50	Camelback	15/60	30/60	60
66	68th Street	30/30	30	30
72	Scottsdale	15/30	30	30
76	Miller	30/30	30	60
81	Hayden	15/30	60	60
84	Granite Reef	60/60	60	60
Express Bus				
510	Scottsdale	2 trips (peak direction)	n/a	n/a
Neighborhood Circulator				
Trolley	Downtown Trolley	10	10	10
Trolley	Neighborhood Connector	20	20	20

*Only west of Loloma Station
Source: Valley Metro/RPTA.

Figure 6: Existing Transit Service



4.0 PLANNED IMPROVEMENTS

This section documents planned transportation improvements in the City of Scottsdale for roadway, bicycle, pedestrian, and transit services/facilities.

4.1 Roadway, Bicycle, and Pedestrian Improvements

Table 4 contains a listing of roadway, bicycle, and pedestrian transportation improvements contained in the City of Scottsdale Capital Improvement Program (CIP) FY 2006-2011 and affecting the Central/Downtown area. The CIP is updated annually and provides a five year program for transportation projects.

Table 4
Planned Roadway, Bicycle, and Pedestrian Improvements

Project/Street	Project Description	Year
Roadway Facilities		
Loop 101 HOV Lanes From:	Shea Boulevard to Loop 202	2007
	Scottsdale Road to Princess Drive	2007
	Princess Drive to Shea Boulevard	2011
Loop 101 General Purpose Lanes From:	Shea Boulevard to Loop 202	2014
	Princess Drive to Shea Boulevard	2022
	Scottsdale Road to Princess Drive	2022
Pima Rd	McDowell Road to 90th Street	2010
Indian School Rd, Drinkwater to Pima Rd	Intersection and access management improvements	2008
McDonald Dr, Scottsdale Rd to Hayden	Intersection improvements	2008
Thomas Rd, city limits	Intersection improvements	2008
Bicycle and Pedestrian Facilities		
Indian School Rd	Addition of bicycle lanes, widened sidewalks	2008
Thomas Rd	Addition of bicycle lanes and widened sidewalks	2010
Scottsdale Rd between Osborn Rd and Chaparral Rd	Addition of bicycle lanes and widened sidewalks	2009
Bicycle Path System	Completion of the Crosscut Canal path system, from Tempe border to Indian School Road	2008
Bicycle Path System	Completion of gaps/retrofits in Indian Bend Wash path system	2010
Pedestrian Mobility Study	Implementation of Downtown pedestrian mobility study recommendations	2008-2009

Source: City of Scottsdale Capital Improvement Program FY 2006-2011, and Regional Transportation Plan.

4.2 Transit Improvements

Planned transit service in Central/Downtown Scottsdale consists of the transit improvements identified in the Maricopa Association of Governments (MAG) Regional Transportation Plan (RTP) and City-funded services. The RTP was approved by voters in November 2004 through Proposition 400 and extends the regional half-cent sales tax for transportation for 20 years from 2006. This table indicates routes in Central/Downtown Scottsdale transit service where local funding will be freed up to put towards other transit services as well as new routes that will be created through the Regional Transportation Plan (RTP).

Table 5
Planned Transit Service

Route	Name	Origin/Destination	Year
Supergrid (all routes funding source change)			
72	Scottsdale/Rural	Loop 101 to Chandler Fashion Center	2006
50	Camelback	Litchfield Rd to Scottsdale Community College	2012
81	Hayden/McClintock	Raintree Dr to Chandler Fashion Center	2014
Green	Thomas	Estrella Mountain Community College to Pima Rd	2019
41	Indian School	Litchfield Rd to Granite Reef/Camelback Rd	2019
Express Bus / BRT (all new routes)			
TBD	East Loop 101 Connector	Scottsdale Airpark to Chandler Fashion Center	2008
TBD	Pima Express	Scottsdale Airpark to Central Station	2012
TBD	Scottsdale/Rural BRT	Shea Blvd to Chandler Fashion Center	2013
TBD	Neighborhood Circulator	New route	

Source: MAG Regional Transportation Plan, 2003

5.0 OPPORTUNITIES AND RECOMMENDATIONS

Opportunities exist to improve the transportation system for Central/Downtown Scottsdale. These improvements are multi-modal in nature, and include roadway, bicycle, pedestrian, and transit improvements.

5.1 Roadway Opportunities

Several alternatives for roadway/traffic improvements were identified during the preliminary stages of the Transportation Master Plan development. These include opportunities, project concepts, evaluations and subsequent recommendations for some of the roadways in the Central/Downtown area.

5.1.1 Chaparral Road

One of the primary reasons for the Central/Downtown Scottsdale study was a resolution of the question of Chaparral Road. Since the 1960's, Chaparral Road had been designated as a "major road" and since the 1980's a four lane major collector roadway. The portion of Chaparral Road between Miller Road and 78th Street was built as a two lane roadway and remains so.

Through study and traffic analysis of the impacts of maintaining that section of Chaparral as a two-lane roadway, it was determined that it is not necessary to widen the road – other nearby roadways can handle the additional traffic. On May 29, 2007, the City Council, in response to neighborhood requests, removed the concept of adding capacity by widening the roadway from further consideration in the Transportation Master Plan.

5.1.2 Camelback Road

Camelback Road is a regional roadway from the White Tank Mountains through the cities of Phoenix and Scottsdale to Hayden Road. In Scottsdale, Camelback Road has a functional classification of minor arterial between 64th Street and Hayden Road, and a minor collector east of Hayden Road to the Pima Road frontage road. Camelback does not connect to Pima Road or the Loop 101 Freeway. East of Hayden Road Camelback serves as a residential street with a volume of approximately 6,000 vehicles per day (vpd) in 2006.

Some of the suggestions for Camelback Road have included the connection of Camelback to Pima Road or to the Loop 101 Freeway. Evaluating the impacts of this suggestion to the single family neighborhoods abutting Camelback, Navajo Elementary School, and the potential rights-of way requirement from the Salt River Pima Maricopa Indian Community, as well as coordinating an interchange of Camelback/Loop 101 with ADOT leads us to a recommendation to drop this suggestion from further consideration.

5.1.3 Indian School Road

Indian School Road is also a regional east-west roadway connecting Scottsdale and Phoenix with a traffic interchange with the Loop 101 freeway. Indian School Road is also designated a truck route. Indian School Road between Pima Road and Drinkwater Boulevard has a functional classification of minor arterial. West of Drinkwater Boulevard, Indian School is a major arterial, with a six-lane section only between 64th Street and Goldwater Boulevard. Continuing west into Phoenix Indian School also has a six-lane cross section. In 1994, the Scottsdale City Council determined that Indian School Road should not be widened to six lanes east of Downtown Scottsdale.

The Indian School Road Enhancement project will result in operational and capacity improvements, such as bike lanes, enhanced sidewalks, shade, landscaped medians and enhanced transit stops is recommended to help smooth traffic flow on Indian School Road. Travel demand forecasts indicate that travel demand levels may be on the cusp of needing roadway capacity improvements.

5.1.4 Osborn Road

Osborn Road is classified as a major collector between 68th Street and Hayden Road and a minor collector east of Hayden Road and west of 68th Street. Osborn Road serves as a connector from Hayden Road to the southern end of Downtown, with the Scottsdale Stadium, and the Scottsdale Healthcare Osborn campus facilities. Some suggestions have been made to widen Osborn Road east of Hayden Road and connect it to Pima Road. The benefits of this suggestion do not overcome the impacts to the single family residential neighborhoods and elementary school along this stretch of Osborn Road.

5.1.5 Thomas Road

Thomas Road is a continuous east-west roadway through the region, with a traffic interchange at the Loop 101 freeway and a truck route designation. In Scottsdale, it is classified as a major arterial between 64th Street and Miller Road; and a minor arterial east of Miller Road and west of 64th Street. East of Civic Center Boulevard the road cross-section is four lanes, west of Civic Center Boulevard the cross-section includes three eastbound and two westbound lanes, plus a two-way left-turn lane. Traffic analysis has shown that traffic impacts are more pronounced on the east end of Thomas Road, bringing about consideration of adding one additional travel lane from Civic Center Boulevard to Pima Road.

The Thomas Road enhancement project will examine this suggestion in greater detail, but the initial impacts of displacement of residents living in single family houses, townhouses, and apartment complexes makes this option potentially costly.

5.1.6 Recommended Intersection Improvements

The Chaparral Road analysis included redistributing traffic that could potentially travel on Chaparral Road to other roadways in the area. There are eight intersections that have approaches operating at LOS E or LOS F during the peak hours under the redistributed Chaparral Road traffic scenario. If Chaparral Road traffic were to be diverted to the other roadways implementing some minor intersection improvements at these intersections can improve the levels of service. Three of the eight intersections can be improved by installing east-west left turn arrows to accommodate the increased traffic volumes for those east-west turning movements. Five intersections can be improved by modifying the existing traffic signal timing to redistribute green time from the north-south movements to the east-west movements. These intersections and the suggested improvements are listed below:

East/west left turn arrows are required for the following intersections:

- Granite Reef and McDonald Drive
- Granite Reef and Chaparral Road
- Indian School Road and Pima Road

Modified traffic signal timing is required for the following intersections:

- Hayden Road and McDonald Drive
- Hayden Road and Camelback Road
- Hayden Road and Jackrabbit Road

- Miller Road and Camelback Road
- Miller Road and Indian School Road

5.1.7 North-South Traffic

The ultimate configuration of north-south streets in the Downtown area will depend on City of Scottsdale's policy and the adoption of Transportation Master Plan recommendations:

- Efficient accommodation of north-south travel in the Downtown area
- Potential mass transit service enhancements
- Preservation and enhancement of Downtown and neighborhood character
- Loop 202 to Downtown access

It should be noted that there is sufficient roadway capacity through the Downtown area to accommodate forecasted traffic even with the increase in traffic volumes. This capacity provides flexibility and a range of options for potential future reconfiguration of the Downtown Couplet and/or Scottsdale Road.

It is recommended that the segment of Scottsdale Road located within the couplet would continue to be classified as a "Major Collector Street". This classification would include four lanes, two in each direction.

As part of this recommendation, the couplet would maintain its designation of a "Major Arterial Street". Ideally, provision of bicycle lanes is recommended for bi-directional travel. Based on modeling results and the projected volumes of traffic on the couplet and Scottsdale Road, it is recommended that the third lane of travel on each leg of the couplet be converted to provide bicycle and pedestrian facilities.

There is an assumption of slower speeds through the section of the Downtown between the couplet, which facilitates bicyclists possibly without designated bicycle lanes or signage.

Potential opportunities related to bicycle/pedestrian modes and transit in the Downtown area are highlighted below and discussed in more detail in Sections 5.2 and 5.3:

- Bicycle/Pedestrian: In general, major roadways in Scottsdale should be designed with bike lanes, and bicycle and pedestrian connections should be optimized. The City could choose to encourage a more bicycle/pedestrian-friendly Downtown by reducing the number of lanes on Scottsdale Road through Downtown (in conjunction with high capacity transit), and using the space for wider sidewalks, landscaping, and/or angled parking. An alternative is to reduce one lane on either segment of the couplet (to two lanes in either direction instead of 3 in one and 2 in the other) to better accommodate bicycle and pedestrian mobility.

- High Capacity Transit (HCT): The HCT section of the Transportation Master Plan has recommended additional study and participation in regional studies regarding high capapcity transit for the Scottsdale Road corridor. Bus rapid transit (BRT), light rail transit (LRT), and modern streetcar alternatives are still being considered. There are multiple alignment options for operating HCT, ranging from operating in mixed traffic in the existing travel lane to operating in semi-exclusive right-of-way in the median of the roadway. It had been recommended that light rail transit would follow an alignment along the couplet rather than on Scottsdale Road through the Old Town section of Downtown.

In either of these latter two options, both the north and south ends of the Scottsdale Road/Couplet intersections would be re-configured to encourage more use of the couplet.

5.2 Bicycle and Pedestrian Opportunities

5.2.1 Pedestrian Level of Service Standards

Adoption of a Pedestrian Level of Service (LOS) model is recommended. This would provide a user perception-based, field-calibrated, and statistically reliable model that has been used in many metropolitan areas and also adopted in Florida, Maryland, and other states[2] [3] to prioritize improvements and identify projects. The Pedestrian LOS model incorporates the following geometric and operational characteristics that affect pedestrians' perceptions of safety and comfort while walking along roadways:

- Existence (and width) of a sidewalk
- Lateral separation of pedestrians from motorized vehicles – this includes the width of the outside travel lane, the width of paved shoulders or bicycle lanes, on-street parking, buffer width, and the sidewalk width's effect.
- Motorized vehicle volumes
- Motorized vehicle speeds

A latent demand model was prepared during the development of the *Transportation Master Plan* to help identify future pedestrian travel demand and included in the Pedestrian element. This forecast modeling provides a way to estimate the latent, or potential, demand for pedestrian travel. Performing actual counts only reveals how many people currently walk a given segment of sidewalk, path or trail, not how many might walk that segment if the conditions were improved.

The latent demand analysis shows that Downtown will remain a popular area for walking. As areas of the Downtown intensify and the Downtown expands to include distinct neighborhoods (i.e., Waterfront, Scottsdale Corridor north of Camelback Road, the Downtown core, and Scottsdale Road south of Indian School Road), the demand for pedestrian facilities will also increase. This implies that a greater range of facilities as well as facilities designed to handle a larger number of pedestrians will be necessary.

5.2.2 Bicycle/Pedestrian Improvement Recommendations

General bicycle and pedestrian recommendations for Central/Downtown Scottsdale area are as follows:

- Osborn is a key east/west connection to and through the Downtown. It is currently designated as a bicycle route and has edge striping to accommodate bicycles. This facility should be enhanced for bicycle travel.

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2 Florida Department of Transportation. 2002 Quality/Level of Service Handbook. Florida Department of Transportation, Tallahassee, 2002.

3 Landis, B.W. et al. Modeling the Roadside Walking Environment: Pedestrian Level of Service. In Transportation Research Record: Journal of the Transportation Research Board, No. 1773, Transportation

- Designate 70th Street, Civic Center Plaza, 68th Street and Miller Road as key pedestrian and bicycle links throughout the Central/Downtown Area. The Pedestrian element contains details recommendations for areas considered "urban" in character, such as the Downtown.
- Build a bridge designated for non-motorized travel across the Arizona Canal at Miller and Jackrabbit Roads.
- Implement pedestrian enhancements, such as streetscape improvements, and widened sidewalks on both sides of the street.
- Implement pedestrian signals at all intersection locations within the Central/Downtown Study Area that cross Scottsdale Road and Indian School Road. Specific examples are the Scottsdale Road and the intersections of Camelback Road, Goldwater and Drinkwater Boulevards, Indian School Road and Osborn Road. The recommendations of the Pedestrian element will contain additional details.
- Provide pedestrian crossings where appropriate, augmented with pedestrian refuges in medians, along major arterials in the Central/Downtown Study Area.
- Connect Drinkwater Boulevard to the Arizona Canal on the north and Osborn Road on the south.
- Connect Goldwater Boulevard to the Arizona Canal on the north and Osborn Road on the south.
- Enhance Goldwater and Drinkwater Boulevards with bike and pedestrian facilities.
- Implement east/west bicycle connections (on and off street) to Indian Bend Wash.
- Enhance bicycle parking throughout the Downtown districts as well as in and around the Scottsdale Healthcare Osborn Campus core area. The City should identify locations for and install secure bicycle parking (e.g. "cages" or lockers in the City parking structures) and bike racks.
- Improve pedestrian level lighting and way-finding signage between the Downtown districts.
- Improve pedestrian connections across streets adjacent to Downtown parking garages.
- Improve connections and way-finding to (and throughout) prominent recreation areas such as the Arizona Canal and the Indian Bend Wash (specifically where the multi-use path breaks north of Chaparral Rd and begins again at Indian Bend Road).
- Reconfigure Scottsdale Road to accommodate pedestrian traffic with a minimum of eight-foot sidewalk widths wherever possible. Work with property owners where necessary to acquire easements to accommodate enhanced pedestrian facilities.
- On minor Central/Downtown area streets, adopt minimum of six-foot sidewalk widths.
- Implement the findings of the Downtown Pedestrian Mobility Study.

5.3 Transit Opportunities

Recommended transit service in Central/Downtown Scottsdale includes opportunities beyond what is currently planned for the area. These improvements include further enhancement to the existing local, fixed route, and express bus service, as well as new types of transit service and

amenities such as high capacity transit (HCT) on the Scottsdale Road corridor. The recommended transit improvements in Central/Downtown Scottsdale are summarized in Table 6. For additional detail, please refer to the Transit and HCT components of the Transportation Master Plan.

Table 6
Transit Opportunities

Transit Improvement	Description
Circulator	Improvement to Neighborhood Connector to serve additional areas in Central/Downtown Scottsdale. Potential destinations include residential areas north and east of Downtown, Indian School Park, and Chaparral Road. Increase operation hours for more nighttime usage to serve full-time residents.
Local Bus Routes	Service frequency and hours of service improvements: ▪ Route 72 (Scottsdale Rd) ▪ Green Line (Thomas Rd) ▪ Route 41 (Indian School Rd) ▪ Route 50 (Camelback Rd)
Express Bus Routes	East Loop 101 Connector: Provide a direct connection to local bus service in Central/Downtown Scottsdale via Chaparral Road, Camelback Road, and/or Indian School Road.
Enhanced Bus Service on Scottsdale Road	▪ Limited stops (major arterials and/or major destinations only) ▪ 10-minute peak hour frequency (no schedule needed) ▪ Enhanced shelters with real-time passenger information ▪ Unique branding (bus, shelters, signage)
High Capacity Transit	The HCT Study of the Transportation Master Plan is evaluating HCT options on Scottsdale Road through Central Scottsdale. There are multiple alignment options for operating HCT. These alignments range from operating mixed traffic in the existing travel lane to operating in semi-exclusive right-of-way in the median of the roadway.
Passenger Amenities	Other transit facility improvements in Central/Downtown Scottsdale focus on improving passenger amenities at existing and new bus stops. These improvements will include the new standard bus shelter and corresponding passenger amenities (seating, trash receptacles, bicycle racks, and other amenities) that will enhance the safety and comfort of transit patrons. Special consideration will be given to improving passenger amenities high transfer locations where multiple bus routes converge. As service and ridership increase, new amenities such as electronic display boards and real-time passenger information will be introduced. Public restroom facilities are often provided at transit centers like Loloma, and should be considered in other high transfer location transit centers.

Source: HDR, 2006

APPENDIX A: CHAPARRAL ROAD CITY COUNCIL DECISION BACKGROUND INFORMATION

CITY COUNCIL REPORT

MEETING DATE: May 29, 2007 ITEM NO. GOAL: Transportation

SUBJECT

Consideration of and possible action on alternatives to widening Chaparral Road and impacts of alternatives.

Summary

Per City Council direction, in response to a citizen petition, alternatives to widening Chaparral Road on the segment from Miller Road to 78th Street, and the impacts of the various alternatives will be presented for possible action.

A citizen petition was presented to the City Council on March 20, 2007 requesting:

> "We, the undersigned citizens of Scottsdale, DO NOT WANT THE CONDEMNATION AND REMOVAL OF HOMES FOR THE WIDENING OF CHAPARRAL ROAD. We do not believe it is in the best interest of the established neighborhoods or the City at large. WE WANT THE SCOTTSDALE CITY COUNCIL TO COMMIT TO NOT REMOVING HOMES OR WIDENING CHAPARRAL ROAD."

The City Council heard this petition on April 10, 2007 and directed staff to return by the end of May with alternatives to widening Chaparral Road, and a preliminary analysis of what impacts those alternatives may have on surrounding neighborhoods.

Related Policies, References:

- Scottsdale General Plan 2001
  - Community Mobility Element
  - Neighborhoods Element
  - Economic Vitality Element
- Streets Master Plan, 2003 (currently being updated)
- Downtown Plan (currently being updated)
- Citizen Petition, submitted March 20,2007

Key Considerations

- In response to a petition requesting the City Council remove the concept of widening Chaparral Road from consideration in the Transportation Master Plan, City Council directed staff to return with alternatives to widening the roadway and the impacts of alternatives on other neighborhoods.
- City staff collected updated traffic volumes for the area in April 2007 and prepared a preliminary traffic analysis using this data.
- Traffic volumes along Chaparral Road between Miller Road and 78th Street have ranged from 14,800 in 1986 to 17,100 in 2007. The lowest recorded counts were 12,000 in 1992 and the highest 20,900 in 2002.

- Updated Scottsdale transportation modeling will be completed in July and will be incorporated into findings for the Transportation Master Plan, including the Downtown/Central Scottsdale subarea study and updated Streets element of the plan.
- Chaparral Road street classification has been identified as "major street" or "major collector" (4 lane roadway) since the 1962 Scottsdale General Plan.
- The primary land use along the Chaparral Road corridor from Loop 101 to 68th Street is residential.
- Neighbors in the vicinity of Chaparral and 82nd Street have presented a petition to the City requesting that the City Council wait for the results of the Transportation Master Plan before taking action regarding Chaparral Road. The petition is attached.

Background

Chaparral Road street designation

Since the 1962 Scottsdale General Plan (prepared by Maricopa County for Scottsdale), Chaparral Road has been designated as a "major street". Chaparral was listed as a major street east of Miller Road in the 1962 Plan. The 1967 City of Scottsdale General Plan reiterated the designation of "major street" from Scottsdale Road to Pima Road. The 1981 and 1991 Circulation Elements of the General Plan designated Chaparral Road as a "major collector" (4-lane) road. The 2001 Community Mobility Element of the General Plan did not specify the street classification, however indicated Chaparral Road was a Citywide System street. The 2003 Streets Master Plan designated Chaparral Road as a "major collector" street from Scottsdale Road to Pima Road. In June 2002, the Transportation Commission approved a recommendation to consider changing the General Plan designation for Chaparral from a major collector to a residential street, and to adopt and monitor roadway modifications to address neighborhood traffic concerns on Chaparral Road. The City Council took the letter of recommendation under advisement, but no action was taken.

Transportation Master Plan process

The Transportation Master Plan was initiated in November 2005 with Council approval of a contract with HDR Engineering, Inc. The scope of this project includes updates to or new Streets, Transit, Bicycle and Pedestrian plans, as well as subarea studies for high capacity transit, north area, airpark area and downtown area planning, including an examination of the Central/Downtown area of Scottsdale to address Downtown transportation issues such as Chaparral Road. The Central/Downtown area circulation study is scheduled to be presented to the Transportation Commission for their review on Thursday, July 12. Examples of preliminary options (pending detailed modeling, additional data analysis, and technical/financial feasibility) for Chaparral Road under consideration in the Central/Downtown area circulation study :

- o widening the ¼ mile segment between Miller Road and 78th Street to match the rest of the corridor;
- o maintaining the existing three lane (one through lane in each direction and one center turn lane) configuration of the road, with operational improvements at cross-streets and driveway intersections;
- o additional options such as making the center lane a reversible lane;

converting the roadway to a one-way street; and diverting traffic at Hayden Road; and

- o modifying the roadway and providing transit/other alternatives to reduce current and future volumes consistent with similar roadways with residential character.

The Master Plan subarea study was designed to provide objective data regarding existing and projected access and travel demand to and from, around, and through downtown, and options to address future demand. To provide the most accurate data and projections, the project team has worked closely with Maricopa Association of Governments (MAG) regarding their socio-economic projections and the transportation modeling based on those projections. In January 2007, MAG began transferring their modeling system to new software and helped train city of Scottsdale staff in the new modeling software. The MAG transportation model is a regional model for all of Maricopa County. The new model will enable Scottsdale staff to do more precise subregional modeling (as opposed to regional modeling) for Scottsdale and specific areas of Scottsdale, including the Central/Downtown area. The modeling data was transferred to Scottsdale in early April; it is expected that preliminary analysis will be completed for inclusion in the Transportation Commission's master plan deliberations in July.

Other citizen petitions regarding Chaparral Road

In August 2006, a petition asking City Council to widen Chaparral Road was presented to the Council by William Crawford and considered in September 2006. At that time, Council opted to wait until the results of the Transportation Master Plan were provided before making decisions regarding this roadway.

On May 15, 2007, residents of the Scottsdale Country Acres (generally at 82nd Street and Chaparral Road) neighborhood presented a petition to the City Clerk "urging City Council members to wait for the results of a currently commissioned master transportation plan before making decisions regarding the widening of Chaparral Road between Hayden and Miller Roads." These neighbors requested that the petition be included in the Council packet for the May 29, 2007 meeting, and the petition is attached to this report.

Downtown Plan update

In 1984, the City Council adopted the Downtown Plan, a long-range policy document intended to guide the growth and development decisions for the 1 ½ square miles of Downtown Scottsdale. The plan calls for a unified strategy to raise the quality, character, marketability, and overall viability of Downtown. The plan encourages Downtown to become a mixed-use center with an emphasis on the integration of historic resources, specialty retail, office, residential, restaurant and hotel uses. For the past 20 years, the Downtown Plan has framed public policy with regard to Downtown Scottsdale. In 2006, a comprehensive process to update the Downtown Plan was begun. A Scottsdale Downtown Town Hall was held in November 2006 as the "kick-off event" for the update of the Downtown Plan. Approximately 100 community leaders, business owners and residents participated in three days of intense discussion and debate. The final report from this independent process recommended, among

other ideas for Downtown enhancement, the widening of Chaparral, Indian School, and Thomas Roads to enhance vehicular travel to Downtown. The final report was presented to City Council in February 2007.

The Town Hall report and recommendations are only the first step in a year long process to update the Downtown Plan by spring of 2008. While the Town Hall report and recommendations will help form the basis for some of the vision, goals and objectives to be achieved in an updated Downtown Plan, some of the more specific recommendations regarding circulation, cultural facilities and open space planning will need to be technically analyzed and evaluated through both the Transportation Master Plan and Downtown Plan Update processes, culminating in final adoption by the City Council.

Villa Monterey neighborhood meeting

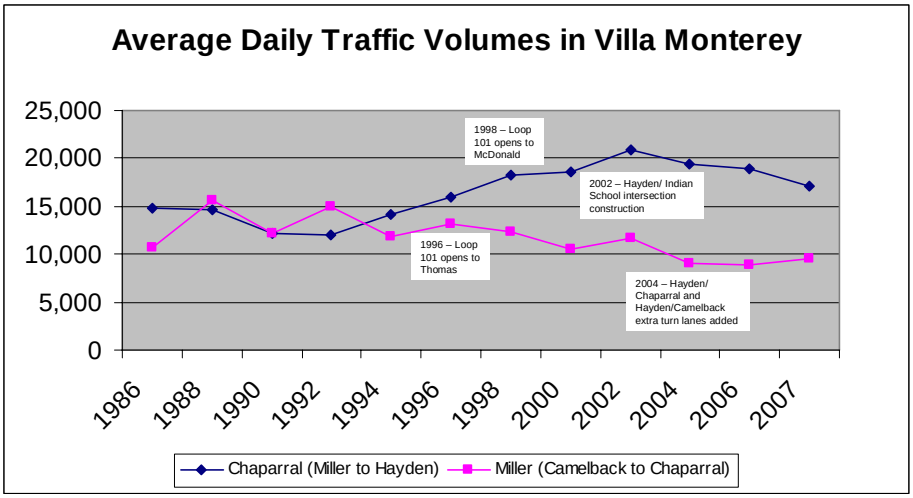
On April 25, 2007 several City Council members and city staff attended a meeting sponsored by Villa Monterey. Handouts by city staff included a listing of options that had been suggested through the public process by citizens, business owners, transportation professionals, and other interested parties. None of the options listed included widening of the Chaparral segment from Miller Road to 78th Street. Neighbors were asked to rate the options on a scale from 1 to 5 and return the listing to the City for additional input into this important issue. The homeowners association also developed a questionnaire for resident input. The report of results of both of these input requests is attached.

Traffic background and data on Chaparral Road

Beginning in 1986, the City has prepared a biennial report on traffic volumes and accident rates. The report focuses on streets designated as local collectors or above and is based on data collected from traffic counters placed in the street and from police accident reports. For the segment of Chaparral Road between Miller Road and Hayden Road, the average daily traffic volume in 1986 was reported to be 14,800. This volume grew to 18,900 vehicles per day (vpd) in 2006, a change of 27.7% over the 20 year period. During this time period, the highest average volume was 20,900 vpd in 2002, when major roadway construction in the Hayden/Indian School intersection was underway. The lowest average volume of 12,000 vpd was reported in 1992.

To make sure that the most recent data was available for use in deliberations, additional volume data for the segment of Chaparral Road between Miller and Hayden was collected last month (April 2007). The average daily volume totaled 17,100 vehicles per day, which is an increase of 15.5% over the 1986 totals but a decline from previous traffic counts since 1998.

The following chart shows daily traffic volumes along the Chaparral Road segment from Miller Road to Hayden Road and along Miller Road south of Chaparral; and some events that may have influenced traffic volumes. Other events that may have influenced traffic volumes over time are: the widening of Chaparral Road from Hayden to Pima to 5 lanes in 1996, and traffic mitigation measures installed on Chaparral Road in 2003/2004.



Traffic collisions on Chaparral Road

In addition to traffic volume data, the City collects the number of reported collisions on all major street segments and at all major intersections in the city. This data is published every two years along with the traffic volume data.

The data shows that since 1996 the collision rate for the section of Chaparral Road between Miller and Hayden Roads has exceeded the citywide average rate. In 2004 (the latest citywide collision average available) the citywide average was 1.84 collisions per million vehicle miles; the rate for Chaparral Road was 3.67 collisions per million vehicle miles. In 2006, the rate for Chaparral Road had declined in this roadway segment to 2.90 collisions per million vehicle miles. This section has also exceeded the rates on all other sections of Chaparral Road. A detailed review of the collisions that occurred in 2002 and 2004 show that over 80 percent of the collisions were identified as rear-end collisions within this segment. It is likely that the high collision rate is due to the street transitioning from 4 to 2 travel lanes, combined with the high number of access points from driveways along this section.

East and west bound traffic on Chaparral Road in April 2007

The directional split of traffic measures how much traffic is traveling in one direction versus the other during a given period. April 2007 counts showed that during the morning peak hours, fifty-eight percent (58%) of the traffic between Miller Road and Hayden Road was traveling westbound. It should be noted that Chaparral Road does not exhibit normal morning peak time characteristics, but instead shows a fairly flat level of increased traffic throughout the morning hours appearing to be oriented more to shopping, school, and business trip-related characteristics rather than employment related. During the evening peak hours, fifty-two percent (52%) of the traffic was traveling eastbound. The directional split eastbound and westbound is fairly balanced, indicating that traffic is traveling to destinations both east and west along Chaparral Road. This pattern is consistent with the land uses found at each end of the corridor – Downtown Scottsdale on the west and the Chaparral Business Park and Scottsdale Community College on the east.

Historic Downtown development trends & Chaparral Road traffic data

Over the past twenty years, major development under the Downtown Plan has typically occurred during particular years rather than being evenly spread over each year. When these "spikes" in major Downtown development trends are examined in comparison to the historic daily traffic volumes along Chaparral Road from Hayden to Miller Roads for the same time period (1986-2006), it is apparent that the majority of the major downtown development projects did not directly impact the daily traffic volumes along this section of Chaparral Road. Rather, it appears that the greater impacts to daily traffic volumes along the Hayden to Miller section of Chaparral Road occur at times when major transportation projects or impacts occur. A chart summarizing this information is in the May 2007 traffic analysis report.

Traffic background and data on east/west streets parallel to Chaparral Road

To test whether Chaparral Road west of Hayden Road has seen greater changes in volumes than other east-west corridors, historic traffic data was reviewed for the McDonald Drive, Camelback Road, Indian School Road and Thomas Road corridors. For the 1986-2006 period, average vehicle per day counts grew by 20% on McDonald Drive, 62.5% on Indian School Road and 31.5% on Thomas Road. As with Chaparral Road, each of these corridors is connected to a freeway interchange. Over the same 20-year period, volumes dropped by 23.4% on Camelback Road, which does not connect to Pima Road or the Loop 101 Freeway. Further review of changes in traffic volumes on nearby east-west corridors connected to the Loop 101 Freeway shows that growth in travel demand east of Hayden Road has been substantially greater. In large part, this is likely due to the fact that both Camelback Road and Osborn Road each provide four additional travel lanes for east-west travel on the west side of Hayden Road heading into the Downtown area. Among the corridors connected to the freeway, Indian School Road has become the main conduit to and from Downtown Scottsdale. The greater growth in traffic volumes along Indian School is likely due to its more direct access and to the fact that traffic flow has been improved through widening of the Hayden Road intersection and the installation of intelligent transportation system (ITS) features.

East- West Traffic Volumes						
	West of Hayden Rd.		***% Change***	***East of Hayden Rd.***		***% Change***
Street	**1986**	**2006**	**1986 to 2006**	**1986**	**2006**	**1986 to 2006**
Chaparral	14,800	18,900	27.7%	14,800	30,900	108.8%
McDonald	17,500	21,000	20%	14,000	19,100	36.4%
Camelback	26,500	20,300	-23.4%	no counts – local residential	no counts – local residential	no counts – local residential

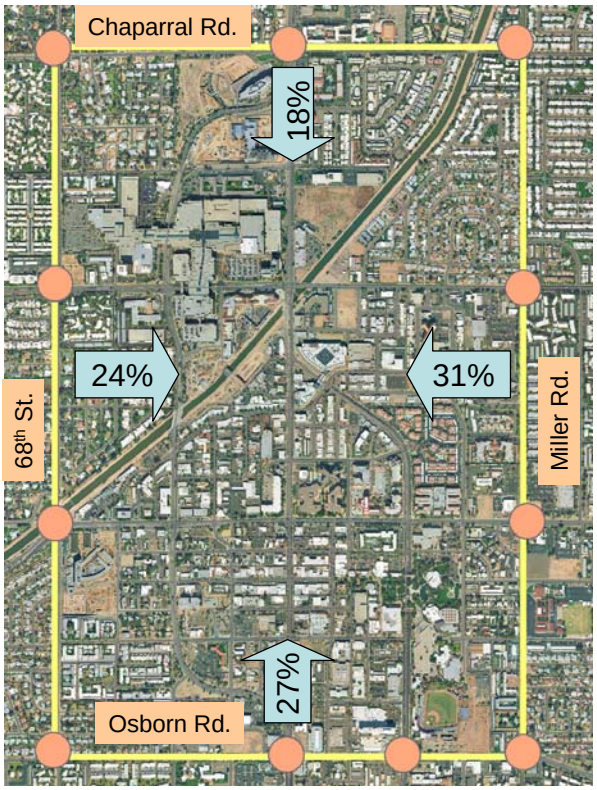
				street	street	street
Indian School	25,600	41,600	62.5%	17,500	38,200	118.3%
Thomas	26,000	34,200	31.5%	18,600	30,100	61.8%

The general trend for traffic volumes in the southern portion of the City has been increases in volumes in the main east-west corridors and decreases in volumes for the main north-south corridors over the past ten years. This reflects a change in travel patterns due to the construction and opening of Loop 101. The freeway has been used for north and south travel, with more drivers traveling east and west to get to and from the freeway. Figures for the roadway segments east of Hayden Road indicate the greatest increases in traffic volumes.

Access into Downtown

Recent intersection counts have been examined to assess the directional splits for access into the Downtown area bounded by Miller Road, Osborn Road, 68th Street and Chaparral Road. Based on these counts, approximately 31% of traffic enters the Downtown area from the east (on Chaparral, Camelback, Indian School, and Thomas Roads), 27% from the south (on 68th Street, Goldwater, Scottsdale Road, Drinkwater, and Miller Road), 24% from the west (on Camelback, Indian School, and Thomas Roads) and 18% from the north (on 68th Street, Goldwater, Scottsdale Road, Drinkwater, and Miller Road). On a typical day, approximately 24% of the traffic crossing Miller Road from the east uses Chaparral Road. This analysis shows that Chaparral does not by itself have a significant role in downtown access, thus modifications to the roadway will have minimal impact on downtown vitality.

Downtown Access Directional Splits



- **Additional background information provided in the attachments to this report includes:**
  - Traffic analysis May 2007;
    - Background: street classification, development along Chaparral Road, Downtown development, Chaparral Road improvements, traffic volumes, collision rates, traffic analysis;
    - Current conditions: regional and local street networks, residential frontage, Downtown development policy, roadway characteristics, traffic volumes and characteristics;
    - Future conditions estimates, to be refined upon availability of modeling information in July 2007;
  - Alternatives for Chaparral Road identified through the Transportation Master Plan process;
  - Suggestions from Villa Monterey neighbors for Chaparral Road street design.

PUBLIC COMMENT

Villa Monterey questionnaires

City Transportation staff met with Villa Monterey residents on April 25th, 2007, to discuss the Chaparral Road issues. Staff listened to resident concerns,

provided information about the upcoming City Council Special Meeting, and answered questions about the study that was being undertaken. During that meeting, attendees were provided with a list of seventeen "alternatives to widening" that had been identified during the Transportation Master Plan discussions. Residents were also asked to suggest alternatives that were not on this list. The residents were asked to rank these options from one to five to identify their preferred solutions. A copy of the complete list of alternatives is provided in the attachments. It is important to note that the alternatives were not described in significant detail at the meeting, nor were they extensively reviewed by staff for engineering or other technical feasibility issues.

Staff received 82 responses to the listing of Chaparral Road alternatives. The top six options identified by responding Villa Monterey residents were the following:

- Install traffic diverters or similar devices to discourage through traffic.
- Improve signage on the Loop 101 Freeway to direct traffic on the freeway to downtown Scottsdale via alternate routes.
- Construct a direct Chaparral Road to Camelback Road connection using the former Villa Monterey golf course property.
- Install a traffic signal at the Chaparral Road and 78th Street intersection.
- Install signage that prohibits drivers from turning onto Chaparral Road during the peak traffic hours.
- Reduce the east-west through lanes on Chaparral Road at the Hayden Road intersection to one lane per direction and install a northbound to eastbound right turn lane on Hayden Road at the Chaparral Road intersection.

The six least desirable options identified were the following (listed in order of most acceptable to least acceptable):

- Convert Chaparral Road to a one-way, westbound street.
- Construct a wall, traffic diverter, or other device to close Chaparral Road at 78th Street, while leaving the section between Miller Road and 78th Street open to traffic.
- Modify Chaparral Road to become a "woonerf" street, which would eliminate curbs and add landscaping and parking.
- Convert the existing center turn lane on Chaparral Road to an additional eastbound or westbound through lane.
- Convert the existing center turn lane on Chaparral Road to operate as a reversible lane during peak hours.
- Rezone the lots along Chaparral Road to other than single family to allow redevelopment.

In addition to the 17 alternatives provided to the Villa Monterey residents by Transportation staff, meeting organizer Kathy Feld provided a list of options for the redesign of Chaparral Road to meeting attendees. The residents were asked to check their preferred options and list any options not indicated on the page. The list of options included: roundabouts, islands with landscaping, monument denoting the community, trolley route on Chaparral, cross walks, bike lanes, on-street parking, and traffic lights. A total of 47 responses were received. The most preferred options were:

- Crosswalks
- Traffic lights
- Islands with landscaping
- Monument denoting the community
- Roundabouts/Trolley route on Chaparral Road (same number of positive responses).

The least desirable options identified were (listed in order of most acceptable to least acceptable)

- Bike lanes
- On-street parking.

A copy of the complete listing of suggestions is provided in the attachments.

Transportation Master Plan public comment about Chaparral Road

Throughout the Transportation Master Plan process public input has been solicited and encouraged through focus group meetings, one on one conversations, email, and website feedback.

The public input process has yielded a great diversity of opinion about solutions for Chaparral Road, with suggestions ranging from widening the section between Miller Road and 78th Street to reducing traffic and maintaining or reducing that section of roadway.

Citizen petitions

In August 2006, a petition asking the Council to widen Chaparral Road was presented to the Council by William Crawford and considered in September 2006. At that time, Council opted to wait until the results of the Transportation Master Plan were provided before making decisions regarding this roadway.

On May 15, 2007, neighbors of the Scottsdale Country Acres neighborhood (generally located at 82nd Street and Chaparral) presented a petition to the City urging City Council to wait for the results of the Transportation Master Plan before making decisions regarding the widening of Chaparral Road. This petition is attached to this report.

ALTERNATIVES

Per Council direction, alternatives to widening Chaparral Road have been examined. Alternatives generally fall into two categories: leaving the roadway generally as is without reducing traffic volumes, while attempting to improve livability conditions for the residents; and restricting traffic volumes to traffic levels from approximately 10-15 years ago. Under either category of alternatives, provision of better transit, bicycle and pedestrian mode choices and creation of incentives to change mode split may reduce overall vehicle trips and enhance livability. Examples of actions to improve these mode choices include improved east/west and north/south transit service, including high capacity transit; trolley expansion to the Chaparral Road area; canal bank path improvements; pedestrian improvements to roadways and to intersections including Scottsdale/Chaparral and Scottsdale/Camelback.

Maintain existing/do not reduce traffic volumes

Discussion has occurred regarding several approaches which are addressed in more detail in the attached traffic analysis report, for example:

- Leave the road with the existing three lane cross-section between Miller Road and 78th Street as is.
- Redesign the section of road from Miller Road to 78th to operate as a one-way street westbound, including the following design options*:
    - removal of planters/medians;
    - installation of a traffic signal at the 78th Street intersection;
    - re-striping to two lanes with on street parking on both sides of the street;
    - redesigning the Miller and Chaparral intersection to prevent northbound traffic from turning right/east on to Chaparral, and force east bound traffic on Chaparral to turn left or right on to Miller; and
    - redesign the Scottsdale Road and Chaparral intersection to allow two left hand turn lanes eastbound from Chaparral onto Scottsdale Road and Goldwater Boulevard, with those in the Goldwater turn lane having the option of going straight into the office complex.

* The design options listed here are not exclusive to this alternative, but could be used on other alternatives as well.

Restrict traffic volumes to 1992-1996 levels

Discussion has occurred regarding several approaches which are addressed in more detail in the attached traffic analysis report, for example:

- Redesign the road to be consistent with a local street. Move the travel lanes to the middle of the cross section by removing the center turn lane and use the additional land area to provide bike lanes, wider sidewalks, landscaping, on-street parking or low walls at the outside edges of the new cross section. Improve crossing alternatives by providing additional traffic control devices.
- Construct a direct Chaparral Road to Camelback Road connection using the land in the Villa Monterey Park just east of Hayden Road.

ASSESSMENT OF ALTERNATIVES

In the evaluation of alternatives to widening Chaparral Road, it was important to evaluate the impacts of reducing or maintaining existing and projected future traffic volumes on Chaparral Road between Miller Road and 78th Street. The following chart estimates the number of existing trips and how many trips would need to be relocated to reduce Chaparral Road traffic levels to 1992-1996 levels. Below is a chart that shows the two major alternatives to widening being considered.

Existing Conditions:

Action	Number of Trips	Trips to be Relocated
Maintain current volumes	17-19,000 vpd	
Restrict/divert traffic	12,000 vpd	5-7,000 vpd

A scenario assuming the relocation of 5,000 to 15,000 existing trips to achieve volumes of less than 5,000 vehicles per day was evaluated to determine outside impacts on the local street network. A 15,000 vehicle per day reduction

would be the most extensive level of traffic restriction envisioned for Chaparral Road. Preliminary traffic assignments for this scenario indicate that Miller Road, 78th Street, Jackrabbit Road, Camelback Road, McDonald Drive, and Indian School Road would be most impacted; those impacts would not require widening, although some minor intersection improvements could be recommended.

Future Conditions

In advance of the availability of forecast travel demand from the modeling effort due in July 2007, various traffic growth rates were tested to determine how much additional growth in traffic could occur before the existing street network would need capacity improvements. Level of service (LOS) was determined for each movement, approach, and intersection for the morning and evening peak hours. LOS is generally a measure of roadway capacity and delay with LOS A, B, and C indicating that a road is operating under capacity, LOS D is at capacity, and LOS E or F indicating that roadway traffic is at or exceeding capacity and there is delay. At a thirty percent (30%) increase in traffic volumes, LOS is about equally divided between under capacity, near capacity, and at or exceeding capacity. At a fifty percent (50%) increase in traffic volumes, more movements are at or exceeding capacity. It is anticipated through this analysis that total traffic volumes could be increased by between thirty percent (30%) and fifty percent (50%) without requiring major street improvements. The growth of traffic volumes does not occur uniformly across all possible routes. It can be expected that as traffic volumes increase, Chaparral Road volumes would not grow as fast as volumes on McDonald, Camelback, Indian School or Thomas. This is because the alternate routes have more excess capacity than Chaparral and so they would remain more attractive routes for a longer period of time. However, a number of specific intersections and movements within the area would operate at LOS E or F, including: McDonald /Hayden and Camelback /Hayden during the morning peak; and Indian School /Hayden, Camelback /Hayden, and Camelback /Miller during the evening peak. This information is illustrated in the May 2007 Traffic Analysis.

Summary Assessment

- If Chaparral Road were to be widened to four through lanes in the segment from Miller Road to 78th Street, current and future traffic volumes will increase to match the additional capacity in the Chaparral Road corridor. If the one way options are used, traffic volumes would also tend to increase.
- All alternatives that would maintain the existing roadway configuration of Chaparral Road would likely increase traffic volumes or maintain current traffic volumes over time.
- Redesigning the roadway in the section between Miller Road and 78th Street to a local/residential street, or otherwise diverting traffic could disperse 5,000 to 7,000 vehicles per day (existing conditions), depending on the level of restriction, to other nearby roadways as drivers seek alternative routes. In future conditions up to approximately 8,000 to 10,000 vehicles per day would be dispersed to other adjacent and parallel roadways. A more refined analysis will be available for future conditions upon completion of modeling information in July 2007.

- The alternative using the former Villa Monterey golf course property for a connection between Chaparral Road and Camelback Road needs to consider the following: deed restrictions on the property which may not allow the use of the land for a roadway; the public process has garnered support for parkland not roadway; homes that currently have open space adjacent would now have roadway adjacent; and drainage features, grade differences and construction would be costly to mitigate.
- Alternatives that suggest widening additional roadways in the surrounding area or connecting Camelback and Osborn to Pima Road would impact established neighborhoods by the increase in traffic along these roadways. Elementary schools are adjacent to Camelback and Osborn Roads.
- Increasing use of transit, bicycle and pedestrian modes to and around Downtown could reduce impacts on Chaparral and adjacent roadways. This could require both physical and policy changes to encourage a higher mode split (percentage of use).
- The option of widening Chaparral Road could be eliminated without major transportation system impacts or impacts to Downtown growth and revitalization; however, there would be moderate increases in traffic on adjacent and parallel roads if the existing configuration is retained.
- Diversion of existing traffic would not have major street system impacts, however, local streets in the surrounding area would be impacted, specifically Miller Road, 78th Street, and Jackrabbit Road.
- It appears that traffic volumes could be increased on parallel and connecting roads without requiring widening of those roads, however some intersections and traffic movements would operate at levels of service below what is identified as the City's goal in the current Streets Master Plan.

Next Steps

Staff will continue to work on completing subregional modeling including refined estimates of future conditions and impacts of potential mode split goals, as well as cost and technical feasibility of preferred options, prior to presentation of a draft report to the Transportation Commission for review at their July 12th meeting.

RESPONSIBLE DEPT(S)

Transportation
Planning and Development Services

STAFF CONTACT(S)

Mary O'Connor
Transportation General Manager
480-312-2334
E-mail: moconnor@scottsdaleaz.gov

John Lusardi
Advance Planning Director
480-312-7501
E-mail: jlusardi@scottsdaleaz.gov

APPROVED BY

Mary O'Connor Date
General Manager, Transportation

Ed Gawf, Assistant City Manager Date

ATTACHMENTS

1. Petition from Kathy Feld/Villa Monterey
2. Petition from neighbors in the Scottsdale Country Acres area (generally 82nd Street and Chaparral)
3. April 10, 2007 City Council meeting minutes regarding response to the Chaparral Road petition
4. Summary of resident responses to alternative options presented at the April 25, 2007 Villa Monterey meeting
5. Report of May 2007 Traffic Analysis

CHAPARRAL ROAD
MILLER ROAD TO HAYDEN ROAD
ROADWAY EVALUATION

May 2007

TABLE OF CONTENTS

I. History

Chaparral Road Street Classification:
Chaparral Road is located on a Maricopa County section line, one mile south of McDonald Drive and one mile north of Indian School Road. This section line is the Camelback Road alignment in the majority of the Valley. Due to the Camelback Mountain land feature, Camelback Road bends to the south at 48th Street in the City of Phoenix, and continues east on an alignment one-half mile to the south of the section line through the City of Scottsdale. Because Chaparral Road lies on the section line, it has always been identified as a major street.

The 1962 Scottsdale General Plan, prepared by Maricopa County for the City of Scottsdale, indicates that there was a decision to maintain Camelback Road on the half-mile alignment. It was noted that Camelback Road should not be a major street east of Miller Road due to concerns that this would increase traffic adjacent to the existing Navajo Elementary School. "Coronado Drive" (on the Chaparral Road alignment) was designated as the major east-west street for this corridor. It was shown as a major street from Miller Road to Pima Road, with "Proposed Expressway, Freeway, or Parkway" alignment options shown along the Indian Bend Wash and Pima Road alignments.

The 1967 City of Scottsdale General Plan designates Chaparral Road as a Major Street from Scottsdale Road east to a future "Freeway-Expressway" located along the Pima Road alignment. The plan shows Chaparral Road continuing east into the "Salt River Indian Reservation." Camelback Road is shown terminating as a major street at the Indian Bend Wash.

The Circulation Element of the 1981 City of Scottsdale General Plan designates Chaparral Road as a Major Collector Street (four lane road) from 64th Street to Pima Road. Pima Road is identified as an Expressway. Camelback Road is classified as a Major Arterial Street from the City boundary to Scottsdale Road and a Minor Arterial Street from Scottsdale Road to Hayden Road. The plan did not indicate a Camelback Road intersection with Pima Road.

The 1991 Circulation Element of the City of Scottsdale General Plan designates Chaparral Road as a Major Collector Street from 64th Street to Pima Road. It indicates the planned Outer Loop Freeway on the Salt River Indian Community land with an interchange planned at Chaparral Road.

The 2001 Community Mobility Element of the City of Scottsdale General Plan designates Chaparral Road as a Citywide Systems Street for its entire length. McDonald Drive, Indian School Road, and Thomas Road are all also classified as Citywide Systems Streets from Scottsdale Road to Pima Road. Camelback Road is also classified as a Citywide Systems Street east of Scottsdale Road, but does not indicate a connection to Pima Road.

The 2003 Streets Master Plan designates Chaparral Road as a Major Collector Street from Scottsdale Road to Pima Road, with an interchange at the Loop 101 Freeway. West of Scottsdale Road, Chaparral Road is designated as a Minor Collector Street.

Copies of the 1962 Scottsdale General Plan, the 1967 City of Scottsdale General Plan, the Circulation Element of the 1981 City of Scottsdale General Plan, the 1991 Circulation Element of the City of Scottsdale General Plan, the 2001 Community Mobility Element of the City of

Scottsdale General Plan, and the Street Classification Map of the 2003 Streets Master Plan are contained in Appendix A.

Development Along Chaparral Road Between Miller and Hayden Roads:
The primary land use along the section of Chaparral Road from Miller Road to Hayden Road is residential. There are three subdivisions that have frontage along this section of Chaparral Road – Villa Monterey (Units Four, Six, and Seven), Scottsdale Monterey, and La Villita. There is also a shopping center, Chaparral Plaza, located on the northwest corner of Hayden Road and Chaparral Road.

The Villa Monterey subdivision was approved over a period of time, beginning in 1961 and ending in 1976. The first plat for Villa Monterey, Unit One, was approved by the Town of Scottsdale in March of 1961. The plat for the portions of Units Four, Six, and Seven with direct residential frontage on Chaparral Road were approved in 1963, 1966, and 1967 respectively. There are 52 lots within Villa Monterey that were approved that have their front yards and driveways along Chaparral Road.

The Scottsdale Monterey Subdivision plat was approved by the City of Scottsdale in 1978. The La Villita Subdivision plat was approved 1983. Neither of these developments have lots with direct residential frontage on Chaparral Road.

The Chaparral Plaza shopping center, located on the northwest corner of Hayden Road and Chaparral Road, includes businesses such as Blockbuster Video, Safeway, and other commercial uses that serve the surrounding residential areas. The zoning district and site plan for the shopping center were approved by zoning cases in 1977 and 1978.

Downtown Development:
The Downtown area of Scottsdale has served as the functional and symbolic center of the City since its incorporation in 1951. As the City grew, the role of Downtown shifted from a country town center serving the surrounding agricultural activity to a community center for a budding array of single family homes. The city's growth has led to continuous change in the Downtown.

As the City has grown and the Downtown was no longer the geographic center of the community, Downtown Scottsdale has been redefined as the commercial, cultural, civic and symbolic center of the community. Downtown's character is defined in a multitude of ways: as a tourist attraction; as a specialty retail environment; as a place where the visual and performing arts flourish; as a burgeoning employment center; and as a unique blend of the historic and contemporary.

In 1984, the City Council adopted the Downtown Plan, a long-range policy document intended to guide the growth and development decisions for the 1 ½ square miles of the community that compromise Downtown Scottsdale. The plan calls for a unified strategy to raise the quality, character, marketability, and viability of Downtown. The plan also encourages Downtown to become a mixed-use center with an emphasis on the integration of historic resources, specialty retail, office, residential, restaurant and hotel uses. One of the primary components of the Downtown Plan was to create residential land uses to ensure "24-hour occupancy" in the Downtown – thus preventing the urban decay often experienced in downtown areas. For the past twenty years, the Downtown Plan has framed public policy with regard to Downtown Scottsdale. Some milestone projects approved under the Downtown Plan include:

- Scottsdale Fashion Square Mall (1986)

- Marriott Hotel (1986)
- Scottsdale Financial Center Office Complex (1986)
- Scottsdale Galleria Mall (1987)
- Scottsdale Stadium Expansions (1990, 2006)
- San Marin Multi-Family Residential (1991)
- Couplet Roadway System (1991)
- Loloma Transit Center (1995)
- Medical Campus Expansion (1996-Present)
- Scottsdale Fashion Square Nordstrom Expansion (1996)
- Finova Office Headquarters (1997)
- Lincoln Towne Center Mixed-Use(1999)
- Scottsdale Waterfront Mixed-Use Commercial/Office (2003)
- Loloma/Main Street Plaza Mixed-Use Commercial/Residential (2004)
- Optima Camelview Residential (2004)
- Hotel Valley Ho/Main Street Residential (2004)
- Stetson/South Canal Mixed-Use Commercial/Office (2004)
- Rose Garden Residential (2005)
- Portales Corporate Center II Office (2005)
- W Hotel (2005)

Since 1984, the Downtown Plan and subsequent community efforts have been successful at guiding the growth, both financially and physically, of Downtown Scottsdale. Downtown's more recent successes under the plan include the addition of more than 2,500 new residential units as well as public and private development investment totaling $2 billion.

Chaparral Road Modifications:
The section of Chaparral Road from Scottsdale Road to Miller Road was widened to five lanes (two travel lanes in each direction with a center turn lane) in 1974 as a capital improvement project. A bridge structure was constructed over the Arizona Canal as a separate capital improvement project prior to this street project.

The three lane section (one lane each direction with center turn lane) from Miller Road to 78th Street was completed with the development of the Villa Monterey Subdivision. These improvements were likely completed between 1965 and 1970. Eighty feet of right-of-way was dedicated for Chaparral Road adjacent to this section. This was consistent with Maricopa County requirements for major roadways along section lines.

The five lane section from 78th Street to Hayden Road was constructed with the adjacent development of the Scottsdale Monterey Subdivision, the La Villita Subdivision, and the shopping center. These improvements were completed between 1978 and 1983. The City of Scottsdale constructed the five lane bridge section of Chaparral Road over a portion of the Indian Bend Wash immediately west of Hayden Road during this same time period.

The section from Granite Reef to Pima Road was widened to five lanes in 1991 as a capital improvement project. This project included the construction of frontage roads for the portions of Chaparral Road with single family residential lot frontage.

The section from 82nd Street to Granite Reef was widened to five lanes in 1996 as a capital improvement project. This project also included the construction of frontage roads for the portions of Chaparral Road with single family residential lot frontage on the south side and town home lot frontage on the north side.

A series of median islands and median enhancements were constructed along Chaparral Road between the Arizona Canal and Hayden Road in 2003. The intent of the project was to improve the pedestrian environment by providing refuge areas, improve aesthetics in the corridor, and prevent vehicles from passing in the two-way left turn lane. StreetPrint and left turn striping were added in the section between 78th Street and Hayden Road to control routing and improve left turn safety.

At approximately the same time as the median enhancement project was constructed, several intersection capacity improvements were completed to encourage traffic to use Camelback Road west of Hayden Road as an alternative route. These included an additional westbound left turn lane on Chaparral Road at Hayden Road, an additional eastbound left turn lane on Camelback Road at Hayden Road, a northbound right turn lane on Hayden Road at Chaparral Road, and a southbound right turn lane on Hayden Road at Camelback Road.

Traffic Volumes:
The City's Traffic Engineering Division collects traffic volume data on all major street segments and at all major intersections in the city. This data is published every two years along with collision data. The traffic volumes data collected on Chaparral Road is shown in the table below. The traffic volumes can vary significantly from year to year due to changes in travel patterns, street construction, new development, and other factors.

Chaparral Road Daily Traffic Volumes											
Segment	**1986**	**1988**	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**
Pima to Granite Reef	5,700	12,600	15,500	6,600	6,000	15,600	21,400	22,900	28,000	26,400	27,500
Granite Reef to Hayden	14,800	12,600	12,400	10,100	15,400	17,600	23,400	26,900	26,200	25,300	30,900
Hayden to Miller	14,800	14,700	12,100	12,000	14,200	16,000	18,200	18,600	20,900	19,400	18,900
Miller to Scottsdale	13,000	15,500	14,900	14,600	16,400	19,700	16,700	19,500	25,300	19,200	17,800
Scottsdale to 68th Street	9,800	14,400	6,600	6,200	7,100	8,900	8,200	7,500	6,100	3,200	5,900

The data shows that the greatest growth in traffic volumes has occurred in the two sections closest to the 101 Freeway, Pima Road to Granite Reef Road and Granite Reef Road to Hayden Road. The primarily three lane section of Chaparral Road between Miller Road and Hayden Road has experienced a 28 percent growth in traffic volumes during the twenty year period from 1986 to 2006. It has experienced an 18 percent growth in traffic volumes during the ten year period from 1996 to 2006.

Two major events occurred during the time period from 1986 to 2006 that impacted the Chaparral Road volumes. The first was the construction of the 101 Freeway. The freeway was opened from the south to Thomas Road in October of 1996. It was opened to McDonald Drive in July of 1998. The second event was a major intersection improvement project at Hayden Road and Indian School Road, which occurred in 2002.

It appears that traffic growth began increasing in the Chaparral Road corridor from Scottsdale Road to Pima Road in approximately 1996. This coincides with the widening of the section from Hayden Road to Pima Road to five lanes. Volumes increased again in 1998 with the opening of the 101 Freeway. It also appears that traffic volumes were highest in 2002 while the Hayden Road and Indian School Road intersection was under construction.

The general trend for traffic volumes in the southern portion of the City of Scottsdale has been for increases in volumes in the main east-west corridors and decreases in volumes for the main north-south corridors over the past ten years. This reflects a change in travel patterns due to the construction of the 101 Freeway. More drivers are traveling east and west to access the freeway, which is the primary travel route for north and south travel.

Tables with historic traffic volumes for other east-west and north south streets in this area are included in Appendix B. This information is also shown in Figures 1 and 2 in Appendix B for the major streets in the Chaparral Road vicinity.

Historic Downtown Development Trends and Chaparral Traffic Data:
Over the past twenty years, major development under the Downtown Plan has typically occurred during particular years rather than being evenly spread over each year. When these "spikes" in major Downtown development trends are examined in comparison to the historic daily traffic volumes along Chaparral Road from Hayden to Miller Roads for the same time period (1986-2006), it is apparent that the majority of the major Downtown development projects did not directly impact the daily traffic volumes along this section of Chaparral Road. Rather, it appears that the greater impacts to daily traffic volumes along the Hayden to Miller section of Chaparral Road occur at times when major transportation projects or impacts occur (see chart below).

Daily Traffic Volumes Chaparral Road (Hayden Road to Miller Road) Since 1986

Year	Daily Traffic Volumes	Major Downtown Development Projects	Major Transportation Project/Impact
1986	14,800	Fashion Square expansion #1, Marriott Hotel, Scottsdale Financial Center office complex	
1988	14,700		
1990	12,100	Scottsdale Stadium expansion #1; Galleria	
1992	12,000	San Marin Apartments, Couplet roadway system	
1994	14,200		
1996	16,000	Fashion Square Nordstrom expansion; Scottsdale Healthcare Medical Campus expansion	Widened Chaparral to 5 lanes from Hayden to Pima; L101 freeway opens to Thomas Road
1998	18,200	Finova Office complex	L101 freeway open to McDonald Drive
2000	18,600		
2002	20,900		Hayden/Indian School intersection construction
2004	19,400		Traffic mitigation measures installed (2003-04); Hayden/Chaparral and Hayden/Camelback extra turn lanes added
2006	18,900	Scottsdale Waterfront retail	
2007 (Apr 2007)	17,100	Main Street Plaza residential, Stetson/South Canal mixed-use, Hotel Valley Ho	

Collision Rates:

In addition to the traffic volume data, the City's Traffic Engineering Division collects the number of reported collisions on all major street segments and at all major intersections in the City. This data is published every two years along with the traffic volume data. The collision rates for the segments of Chaparral Road are shown in the table below. The collision rates represent the number of collisions per million vehicle miles along that segment of roadway.

Chaparral Road Daily Segment Collision Rates											
Segment	**1986**	**1988**	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**
Pima to Granite Reef	3.85	2.17	1.06	1.66	9.13	2.10	1.63 (1) 1.02 (2)	1.91	0.98	2.28	1.00
Granite Reef to Hayden	1.67	0.43	0.88	0.00	0.36	1.86	0.75 (1) 1.40 (2)	1.02	0.84	2.38	0.89
Hayden to Miller	1.67	0.75	0.45	1.83	0.39	2.74	3.01	5.60	4.73	3.67	2.90
Miller to Scottsdale	1.26	1.77	0.37	1.13	1.67	1.11	1.31	2.53	0.65	1.71	1.23
Scottsdale to 68th Street	1.12	0.00	0.86	0.00	0.00	1.23	2.00	0.73	0.00	0.00	0.00
Citywide Average	**2.72**	**1.86**	**1.14**	**1.68**	**1.69**	**1.67**	**1.70**	**1.70**	**1.49**	**1.84**	**n/a**

1 – Rate prior to the Loop 101 opening to McDonald Drive
2 – Rate after the Loop 101 opening to McDonald Drive

The data shows that since 1996, the collision rate for the section of Chaparral Road between Miller Road and Hayden Road has exceeded the citywide average rate. This section has also exceeded the rates on all other sections of Chaparral Road. It is likely that the high collision rate is due to the transition of the cross section from five lanes to three lanes, which creates unexpected vehicle queues and merging, combined with the high number of access points.

A detailed review of the collisions that occurred in 2002 and 2004 between Miller Road and Hayden Road on Chaparral Road show that over 80 percent of the collisions were identified as rear-end collisions within this segment. The majority of the rear-end collisions occurred between 78th Street and Miller Road. These rear-end collisions are typically caused by sudden stops in the traffic flow, which is likely related to the congestion created by the narrow cross section and vehicles slowing to enter the residential driveways. The other collisions within the segment were angle and right or left turning collisions. The majority of these collisions occurred in front of the Chaparral Plaza shopping center; they are likely the result of vehicles entering and exiting the shopping center driveways.

2002 Traffic Analysis:

In response to Villa Monterey resident concerns, the Traffic Engineering Division staff conducted a traffic analysis for Chaparral Road between Miller Road and Hayden Road in 2002. At the time the concerns expressed by the Villa Monterey residents were: increased traffic volumes, increased travel speeds, increased number of trucks disregarding the “No Trucks” sign, and a decrease in the quality of life due to traffic noise and pollution for those with frontage along Chaparral Road. The residents requested that traffic calming be utilized to divert drivers from traveling on Chaparral Road between Miller Road and Hayden Road. Staff assumed that 8,000 daily vehicles would be diverted from Chaparral Road between Miller Road and Hayden Road.

The conclusions of the analysis were the following:

Traffic calming alone would not be sufficient to divert 8,000 vehicles from this section of Chaparral Road.

Traffic calming was not suggested as a mitigation measure for a major roadway with volumes exceeding 10,000 vehicles per day.

Adding traffic calming devices between Miller Road and Hayden Road would increase congestion, noise, and delay along this section of roadway thus decreasing quality of life.

Local streets in the Chaparral Road vicinity would likely be impacted. Streets such as Coolidge Street, 78th Street, Vista Drive, Camelback Road (east of Hayden Road), 82nd Street, and 86th Street could all see significant increases in traffic volumes.

The results of the analysis were presented to the Transportation Commission on June 20th, 2002. The Commission chose not to recommend installing formal traffic calming devices. They recommended (by a 4-1 vote) changing the roadway classification from Major Collector Street to a Residential Street. They also recommended that staff install some median enhancements on Chaparral Road between Miller Road and Hayden Road to prevent vehicle passing in the center turn lane, improve pedestrian access, and encourage alternative routes. This resulted in the series of roadway modifications constructed in 2003 that were discussed previously. The City Council took the letter of recommendation regarding changing the roadway classification under advisement, but no action was taken.

A copy of the approved minutes from the June 20th, 2002, Transportation Commission Meeting is included in Appendix C.

II. Current Conditions

Regional Area Street Network:
The north-south corridors are well defined in this area of the Valley. The Loop 101 Freeway is the main regional roadway for this area with daily volumes exceeding 100,000 vehicles. Scottsdale Road, Hayden Road, and Pima Road are all north-south arterial roadways that also accommodate regional traffic.

The major east-west corridors in this area are not as well established. Between Shea Boulevard and the Loop 202 Freeway the primary regional roadways are Lincoln Drive, Camelback Road, Indian School Road, Thomas Road, and McDowell Road. Lincoln Drive and Camelback Road extend west through Paradise Valley and the City of Phoenix to connect to other regional north-south corridors such as the Piestewa Freeway; however, they do not connect to the Loop 101 Freeway in the east. Indian School Road, Thomas Road, and McDowell Road all connect the 101 Freeway to the major north-south corridors to the west; however, this leaves a six-mile wide section between Shea Boulevard and Indian School Road with no continuous major east-west roadways.

Local Area Street Network:
In the immediate area, the east-west section line streets McDonald Drive, Chaparral Road, and Indian School Road, all have interchanges on the Loop 101 Freeway. Chaparral Road and Indian School Road both extend to the east serving the Salt River Pima-Maricopa Indian Community. McDonald Drive extends west of Scottsdale Road into Paradise Valley, but not as a major street. Similarly, Chaparral Road also extends west of Scottsdale Road, but not as a major street. Indian School Road is the only street that continues as a major street west of Scottsdale Road.

The half mile east-west streets in the immediate area consist of Jackrabbit Road, Camelback Road, and Osborn Road. All of these roadways are somewhat discontinuous; none of them connect Scottsdale Road to Pima Road. Both Camelback Road and Osborn Road connect Scottsdale Road to Hayden Road; Jackrabbit Road does not connect across the Arizona Canal.

The area street system is depicted in Figure 3 in Appendix D. This figure also identifies the existing number of lanes for each street. The local street network in the vicinity of Villa Monterey is shown in Figure 4.

Residential Frontage:
All three major east-west streets discussed above have some segments with direct residential frontage. The term “direct frontage” implies that the building orientation and front yard face the street. An aerial showing the homes along these three major east-west corridors is provided in the appendix.

There are thirty-two townhouses between 82nd Street and Granite Reef Road with their direct frontage on McDonald Drive. There were 19 single family houses removed along McDonald Drive between Pima Road and 86th Street to accommodate a roadway widening project along this section.

There are 62 townhouses between 82nd Street and 85th Street with their direct frontage along Chaparral Road. There are twenty-seven single family houses between 85th Street and Pima Road with their direct frontage along Chaparral Road. All of the single family houses and most

of the townhouses along this section of Chaparral Road are separated from the roadway by a frontage road; however, there are twenty-three townhouses between Granite Reef Road and 85th Street that do not have a frontage road. As noted previously, there are 52 townhouses between Miller Road and 78th Street with their direct frontages, including driveways, along Chaparral Road.

There are 22 single family houses between 81st Street and Granite Reef Road with direct frontage along Indian School Road; these houses are separated from the roadway by a frontage road.

The half-mile streets in this area all have single family homes with direct frontage between Hayden Road and Pima Road (no frontage roads). There are elementary schools on both Camelback Road and Osborn Road.

The number of residential units fronting McDonald Drive, Chaparral Road, and Indian School Road is shown in Figure 5 of Appendix D.

Downtown Development Policy:
In 2001, the citizens of Scottsdale voted to approve the *City of Scottsdale 2001 General Plan*. The 2001 General Plan establishes a three-level approach to planning including city-wide planning, character planning and neighborhood planning. As part of this tiered planning approach, the Downtown Plan was adopted as the Character Plan for the Downtown area.

As public policy, market conditions and building technologies change over time, the ability to reevaluate and revise long-range policies is important. The 1984 Downtown Plan was intended to provide the framework for downtown decision making for a period of twenty years. The recommended implementation programs under the plan have been successfully achieved. Consequently it is time for the Scottsdale community to embark on a comprehensive update to the existing Downtown Plan.

To begin the extensive public outreach effort associated with the Downtown Plan update, the Scottsdale City Council approved the Downtown Scottsdale Town Hall event which occurred in November 2006. The three half-day event brought a broad cross-section of community members together to discuss the future of Downtown Scottsdale over the next decade. In February 2007, the Arizona Town Hall organization presented the final citizen report and recommendations from the Downtown Town Hall event to the Scottsdale City Council.

This Town Hall report and recommendations are only the first step in a year-long process to update the Downtown Plan by the end of 2007. While the Town Hall report and recommendations will help form the basis for the some of the vision, goals and objectives to be achieved in an updated Downtown Plan, some of the more specific recommendations regarding circulation, cultural facilities, and open space planning will need to be technically analyzed and evaluated through both the Transportation Master Plan and Downtown Plan Update processes, culminating in final decision making by the Scottsdale City Council.

Chaparral Road Characteristics:
Chaparral Road extends from 64th Street/Invergordon Road in the City of Phoenix and Town of Paradise Valley, east past the Loop 101 Freeway and into the Salt River Pima-Maricopa Indian Community. There is an existing freeway interchange at the Loop 101 Freeway.

The section of this roadway from 66th Street to Pima Road lies within the City of Scottsdale. The section from 66th Street to Scottsdale Road is primarily a two lane roadway. The section immediately west of Scottsdale Road has been diverted into the Portales Development at the request of area residents to discourage non-residential traffic from continuing west into the adjacent residential area.

Chaparral Road is a five-lane roadway from Scottsdale Road to the 101 Freeway with the exception of the three-lane section from Miller Road to 78th Street. It extends east of the Loop 101 Freeway as a four-lane divided roadway adjacent to the Scottsdale Community College.

The posted speed limit for Chaparral Road is 35 miles per hour east of Scottsdale Road to Woodmere Fairway, which is immediately west of the Arizona Canal. The section from Woodmere Fairway to Hayden Road is posted at 30 miles per hour. From Hayden Road to Pima Road it is posted at 40 miles per hour.

2007 Traffic Data:
Traffic counts collected in April of 2007 indicate that the current daily traffic volumes on Chaparral Road are as follows:

Pima Road to Granite Reef Road – 25,200 vehicles
Granite Reef Road to Hayden Road – 25,500 vehicles
Hayden Road to Miller Road – 17,100 vehicles
Scottsdale Road to Miller Road – 25,000 vehicles

The mean or average speed along Chaparral Road between Miller Road and 78th Street is 30 miles per hour. Between 78th Street and Hayden Road the mean speed is 41 miles per hour. The 85th Percentile Speed is considered to be approximately one standard deviation from the median travel speed and is considered by traffic engineers when establishing speed limits. For the section of Chaparral Road between Miller Road and 78th Street, the 85th percentile speed is 36 miles per hour. Between 78th Street and Hayden Road, the 85th percentile speed was measured to be 47 miles per hour.

The directional split of traffic volume measures how much traffic is traveling in one direction versus the other during a given period. During the a.m. peak hour, 58 percent of the traffic between Miller Road and Hayden Road was traveling westbound. During the p.m. peak hour, 52 percent of the traffic was traveling eastbound. Chaparral Road does not have a distinct peak in the a.m. peak period as do other roadways like McDowell Road, Thomas Road, Indian School Road, McDonald Drive, or Shea Boulevard. This is illustrated in Figure 6 in Appendix D.

The traffic counts included classification data, which identifies the percentage of traffic that are considered commercial truck traffic (gross vehicle weight over 50,000 pounds). The current percentage of truck traffic on the section between Miller Road and 78th Street is 9 percent. This percentage reduces to 7 percent truck traffic between 78th Street and Hayden Road. Chaparral Road, west of Hayden Road, is not designated as a truck route, and is posted to prohibit truck traffic; however, as is true for all non-truck routes, local delivery by trucks is allowed.

III. Traffic Analysis

Introduction:
The City Traffic Engineering Division staff conducted a traffic analysis to determine the impacts of reducing the traffic volume on Chaparral Road between Miller Road and Hayden Road to be consistent with typical local residential street daily volumes. Paul Basha of Morrison Maierle consulting engineers participated in the preparation of the scope of work, data analysis, and results discussion. The study area was generally bounded by the Loop 101 Freeway to Scottsdale Road, and McDonald Drive to Indian School Road.

Traffic data was collected at seventeen major intersections within the study area that were considered to be the most likely to be impacted by the diverted traffic. Traffic data was also collected at 23 mid-block locations to determine the current daily and peak hour volumes on the area roadways.

Using the gathered traffic data, existing levels of service were computed for the seventeen major intersections within the study area. Currently, in the a.m. peak hour, all study intersections are operating at level of service (LOS) D or better, with the exception of the intersection of Indian School Road and Hayden Road. In the p.m. peak hour, all study intersections are operating at LOS D or better, with the exception of the intersections of Indian School Road and Hayden Road, and of Chaparral Road and Hayden Road.

Results of Analysis:
To determine the impact on the existing transportation network if traffic volumes on Chaparral Road between Miller and Hayden were decreased to residential street vehicle volume levels, staff developed a traffic simulation that reduced the volume on Chaparral Road in this area by 15,000 daily vehicles and re-distributed those vehicles in different percentages to other major street corridors within the study area. The percent of vehicle volume redistributed to each corridor was based upon existing travel patterns and routes, assumptions of the origins and destinations of vehicles, observations of existing traffic conditions, and available roadway and intersection capacity in the study area. The current major travel paths assumed in the analysis for eastbound and westbound traffic are shown in Figures 7 and 8 of Appendix E.

Using the redistributed traffic data, levels of service were computed for the seventeen major intersections within the study area. With the redistributed traffic in the a.m. peak hour, all study intersections are operating at LOS D or better, with the exception of the intersection of McDonald Drive and Hayden Road. In the p.m. peak hour, all study intersections are operating at LOS D or better, with the exception of the intersections of Indian School Road and Hayden Road, Camelback Road and Miller Road, and Camelback Road and Hayden Road.

The 2007 segment volumes and percent change with the redistribution of traffic from Chaparral Road is shown in the table below for those routes most impacted by diverted traffic. Traffic volume increases are predicted for the east-west paralleling routes of McDonald Drive, Jackrabbit Road, Camelback Road, and Indian School Road. The north-south streets with the largest increases in traffic volumes are Miller Road, 78th Street, 82nd Street, and 86th Street.

Daily Traffic Volumes on Routes with Diverted Traffic				
Segment	**Limits**	**2007 Volume**	**New Volume w/ Diverted Traffic**	**% Change**
Camelback Rd	Scottsdale to Miller	21,201	31,026	+46%
Camelback Rd	Hayden to 82nd	8,638	11,038	+28%
Miller Rd	Chaparral to Camelback	9,491	11,591	+22%
Miller Rd	Chaparral to Jackrabbit	3,896	7,751	+94%
Jackrabbit Rd	Miller to 78th	2,152	8,677	+303%
Jackrabbit Rd	78th to Hayden	2,152	4,102	+91%
Granite Reef	Camelback to Chaparral	5,093	5,393	+6%
Granite Reef	Chaparral to McDonald	4,871	5,546	+14%
78th Street	McDonald to Jackrabbit	2,000	3,725	+86%
82nd Street	Camelback to Indian School	4,093	4,918	+20%
82nd Street	Camelback to Chaparral	2,007	2,307	+15%
86th Street	Camelback to Chaparral	1,328	1,628	+23%
86th Street	Chaparral to Jackrabbit	3,684	3,984	+8%
McDonald Dr	Scottsdale to Miller	19,578	22,353	+14%
McDonald Dr	Miller to 78th Street	19,578	22,353	+14%
McDonald Dr	78th Street to Hayden	19,578	24,078	+23%
McDonald Dr	Hayden to Granite Reef	20,701	30,001	+45%
McDonald Dr	Pima to the L101	20,758	30,058	+45%
Chaparral Rd	Miller to Hayden	17,100	2,100	-88%
Indian School Rd	Miller to Hayden	40,383	41,733	+3%
Indian School Rd	Pima to the L101	39,446	43,496	+10%
Hayden Rd	Jackrabbit to McDonald	31,764	36,564	+15%
Hayden Rd	Chaparral to Jackrabbit	31,764	34,914	+10%
Hayden Rd	Camelback to Chaparral	35,654	39,254	+10%

The three intersections listed below would experience decreased delay for certain approaches and movements with the diversion of traffic from Chaparral Road between Miller Road and 78th Street.

- Scottsdale Road and Chaparral Road
- Hayden Road and Chaparral Road
- Pima Road and Chaparral Road

The six intersections listed below would experience increased delay for certain approaches and movements with the diversion of traffic from Chaparral Road between Miller Road and 78th Street.

- Scottsdale Road and Indian School Road
- Miller Road and Indian School Road
- Pima Road and Indian School Road
- Loop 101 Freeway and Chaparral Road
- Hayden Road and Jackrabbit Road
- Pima Road and McDonald Drive

The seven intersections listed below would experience decreased delay for some approaches and movements and increased delay for other approaches and movements with the diversion of traffic from Chaparral Road between Miller Road and 78th Street.

- Hayden / Indian School
- Miller / Camelback
- Hayden / Camelback
- Miller / Chaparral
- Granite Reef / Chaparral
- Hayden / McDonald
- Granite Reef / McDonald

The number of intersections operating at LOS E or F would not increase dramatically, yet the poorly operating intersections would change from intersections along Chaparral Road to intersections along Indian School Road, Camelback Road, and McDonald Drive. The traffic volume would also increase on adjacent roadways within the study area. This shows that if traffic is diverted from the section of Chaparral Road between Miller Road and Hayden Road, the traffic volumes will likely be shifted to other major street corridors and neighborhood streets.

The projected traffic volume increase resulting from the redistributed traffic is shown graphically in Figures 9, 10, and 11 of Appendix E.

Figures 12, 13, 14 and 15 in Appendix E illustrate the level of service impact of the redistributed traffic. The level of service is identified for each study intersection approach for the existing and redistributed traffic conditions during the a.m. and p.m. peak hours.

Figures 16, 17, and 18 in Appendix E identify the level of service by movement, approach, and intersection for the study intersections during the a.m. peak hour. This information is shown in Figures 19, 20, and 21 for the p.m. peak hours. These figures show the total number of movements, approaches, and intersections operating at near or under capacity (LOS A thru D) and at or over capacity levels of service (LOS E and F) under the existing and redistributed traffic conditions (identified as “Maximum Impact”). Figure 22 summarizes the number of intersections at the different level of service conditions.

Suggested Intersection Improvements:
There are eight intersections that have approaches operating at LOS E or LOS F during the peak hours under the redistributed Chaparral Road traffic scenario. Implementing some minor intersection improvements at these intersections can improve the levels of service. Three of the eight intersections can be improved by installing east-west left turn arrows to accommodate the increased traffic volumes for those east-west turning movements. Five intersections can be improved by modifying the existing traffic signal timing to redistribute green time from the north-south movements to the east-west movements. These intersections and the suggested improvements are listed below:

East/west left turn arrows are required for the following intersections:

- Granite Reef and McDonald Drive
- Granite Reef and Chaparral Road
- Indian School Road and Pima Road

Modified traffic signal timing is required for the following intersections:

- Hayden Road and McDonald Drive
- Hayden Road and Camelback Road
- Hayden Road and Jackrabbit Road
- Miller Road and Camelback Road
- Miller Road and Indian School Road

IV. Future Conditions

Anticipated Downtown Development:
Projected build-out numbers relating to potential land use development under the existing Downtown Plan for Downtown Scottsdale have been recently calculated under two alternative scenario analyses as described below.

In the two scenarios, build out is assumed to occur utilizing the Transportation Master Plan dictated year of 2030. All properties in the area - with the exception of the Civic and Medical centers - are assumed to be of a 'mixed-use' character; i.e., residential, hospitality, retail, commercial, office and support services.

The two alternative scenarios under examination reflect Dwelling Unit Density and Gross Floor Area Ratio allowances at 80% and 60% of the existing Downtown Plan. As is typical with development projections, 100% build out is exempted from the alternative scenario options. Due to changes in market forces, building technologies and community needs over time, 100% build-out is assumed to be unachievable.

The existing Maricopa Association of Governments 2005 Update numbers for the Downtown Scottsdale area provide a baseline to compare the two alternate projection scenarios.

The area examined comprises a total of 634 acres. The primary land use impacts reflected include: Number of Dwelling Units, Resident Population, Number of Hotel Rooms, Gross Floor Area of Non-Residential Development, Number of Employees and Weekday (vehicular) Trips.

The impact results for the 80% DU Density and GFAR Ratio are:

- Dwelling Units 9,800
- Resident Population 17,800
- Hotel Rooms 1,800
- GFA (square feet) 25,028,000
- Employees 49,100
- Weekday Trips 232,900

The impact results for the 60% DU Density and GFAR Ratio are:

- Dwelling Units 7,400
- Resident Population 13,400
- Hotel Rooms 1,400
- GFA (square feet) 18,800,000
- Employees 36,900
- Weekday Trips 174,600

Maricopa Association of Governments 2005 Update: Downtown Scottsdale

- Dwelling Units 4,154
- Resident Population 6,090
- Employees 29,015

Traffic Analysis of Future Conditions:
Traffic volumes in the study area were increased incrementally based on the redistributed traffic assumptions to determine how much additional traffic the street system could handle before beginning to experience failure. Level of service was determined for each movement, approach, and intersection for the study intersections during the a.m. and p.m. peak hours. At a 30 percent increase in traffic volumes, the number of movements operating at under capacity conditions (LOS A, B, or C), near capacity conditions (LOS D), and at/over capacity conditions (LOS E or F) are approximately equal during the p.m. peak hour. Under these conditions, 60 of the movements at the study intersections are at LOS E or F, and the system is beginning to fail. At a 50 percent increase in traffic volumes, the number of movements that are at LOS E or F is greater than the number of movements at LOS D or better. Therefore, it is anticipated that the street system can handle the 30 percent increase in traffic volumes without failure. A number of intersections within the study area will operate at LOS E or F; however, the system will continue to function without major street modifications. This information is illustrated in Figures 23 thru 30 in Appendix F.

V. Options for Chaparral Road Identified Through the Transportation Master Plan Process

Introduction:
The options for improving conditions along the three lane section of Chaparral Road between Miller Road and 78th Street consist of three categories: widening the roadway to accommodate the current and future traffic demand, retaining the current three lane cross section while attempting to improve the conditions for the residential frontage, or narrowing the roadway and/or reducing traffic volumes to be more consistent with a local street. Widening the roadway has not recently been discussed as a desired option; however, given the current and historic street classification of Chaparral Road as a five lane street, it is included here as an alternative. These options are discussed below.

Five Lane Options:

Option 5A - Widen to five lanes using the existing eighty feet of right-of-way; leave the existing residential units along both sides of the roadway. This option would require undergrounding the existing 69kV power lines on the north side of the roadway. .

Considerations: The residential units would be closer to the adjacent roadway, decreasing their front yard area and driveway lengths. Livability would be decreased.

Option 5B - Widen to five lanes using the existing eighty feet of right-of-way; remove the residential units along both sides of the roadway. This option would require under grounding the existing 69kV power lines on the north side of the roadway.

Considerations: Existing residents along both sides of the roadway would have to be relocated. Removing residential units along Chaparral Road would still have an impact on those interior units that would now have frontage along the major roadway. Some type of buffering would likely be required.

Option 5C - Widen to five lanes using the existing eighty feet of right-of-way; remove the residential units from one side of the roadway. Construct a frontage road along the remaining residential frontage, similar to the sections of Chaparral east of Hayden Road.

Considerations: Some residents would have to be relocated. Removing residential units along Chaparral Road would still have an impact on those interior units that would now have frontage along the major roadway. Some type of buffering would likely be required.

Additional comments: All options that would widen this section of Chaparral Road to five lanes would likely increase traffic along the corridor. Some vehicles would be diverted to Chaparral Road with the increased capacity, improving conditions along parallel routes such as Camelback Road and Indian School Road. Local streets in the area would likely see the benefits from reduced neighborhood cut-through traffic. Intersection capacity improvements would be necessary at the Chaparral Road and Scottsdale Road intersection.

Three Lane Options:

Option 3A - Retain the existing three-lane cross section of roadway as is with full public access to remain per the current conditions.

Considerations: Livability along this section of roadway would not be improved.

Option 3B - Retain the existing three-lane cross section of roadway as is; install raised medians, roundabouts, stop signs, traffic signals or other traffic calming/traffic control devices to discourage through traffic.

Considerations: The effectiveness of these types of devices would not be certain prior to installation. Typically traditional traffic calming devices are not recommended for traffic volumes exceeding 10,000 vehicles per day. Any new traffic control devices should meet established warrants. Traffic signals, especially at the 78th Street intersection, would likely increase traffic on the adjacent streets.

Option 3C – Retain the three-lane cross section on Chaparral Road; however, install traffic diverters or signage to prohibit certain movements (through traffic or turning traffic) to reduce the volume of traffic on Chaparral Road between Miller Road and Hayden Road.

Considerations: Traffic would be diverted to other streets within this corridor. Enforcement of the restrictions may become an on-going issue. Access to the Chaparral Plaza shopping center could be impacted.

Option 3D – Retain the three lane cross section on Chaparral Road and construct a wall or other device that would eliminate through traffic at a location between Miller Road and Hayden Road.

Considerations: Traffic would be diverted to other streets within this corridor. Local access for area residents would be affected. Access to the Chaparral Plaza shopping center would be impacted.

Option 3E - Convert the existing center lane to operate as a reversible lane during morning and afternoon peak hours (similar to 7th Street and 7th Avenue in the City of Phoenix).

Considerations: May decrease safety as drivers adjust to the reversible lane operation. Left turns into the residential driveways along this section would be prohibited during the peak hours. Traffic volumes would likely increase with the increased capacity. Livability along this section of roadway would not be improved.

Option 3F - Convert center lane to second westbound or eastbound travel lane

Considerations: Left turns into the residential driveways along this section would be prohibited. Neither eastbound nor westbound travel is dominant throughout the entire day. Traffic volumes would likely increase with the increased capacity. Livability along this section of roadway would not be improved.

Additional comments: Some options that would retain the three-lane section along Chaparral Road would either increase traffic volumes along the corridor or maintain current traffic volumes. Some drivers will continue to look for alternative routes on local streets.

Intersection capacity improvements would still be necessary at the Scottsdale Road intersection. Options that prohibit certain movements or completely block access will impact access for the residential properties along Chaparral Road and the Chaparral Plaza shopping center. Drivers may choose to use local streets to avoid these restrictions.

Two Lane Options:

Option 2A - Redesign the section from Miller Road to Hayden Road to operate as a one-way street, either eastbound or westbound. Eliminate the existing center turn lane and use this area to add bike lanes, landscaping, and low walls.

Considerations: Travel speeds would likely increase with one-way operation. Traffic volumes would not be reduced to local street levels. Safety would likely be reduced due to disparity in travel speeds, vehicles changing lanes, turning vehicles, and driver confusion. Neither eastbound nor westbound traffic is currently dominant for the entire day. Some increase of traffic volumes on the area local streets would be likely due to vehicles using the corridor to travel in the opposite direction.

Option 2B - Narrow the cross section to be consistent with a local street. Create a local street environment by reducing the existing three lane cross section to two lanes by removing the center turn lane.

Considerations: Left-turning vehicles would stop in the through travel lanes obstructing through traffic. Other east-west roadway capacity would have to be added in this area to accommodate the diverted Chaparral Road traffic (likely along Indian School Road, Camelback Road, or McDonald Drive). Drivers would need incentives to use alternate routes as well as penalties for using Chaparral Road. This could only be accomplished by turn restrictions, diverters, or other punitive devices. Traffic volumes would likely increase on area local streets as drivers seek alternative routes.

Other Concepts:

Option 1A - Construct a direct Chaparral Road to Camelback Road connection using the land in the Villa Monterey Park immediately east of Hayden Road.

Considerations: The deed restrictions may not allow the use of the land for a roadway. Homes that currently have open space adjacent would now have a new roadway adjacent. This proposal would be in direct opposition to long standing community intent for the public use of the Indian Bend Wash corridor as a green belt/recreation area. The City has already discussed new uses for the park land with area residents. This would be an expensive roadway project due to the drainage features, grade differences, and construction costs. Traffic volumes along the section of Chaparral Road west of Hayden Road may not decrease significantly.

Option 1B – Create an offset intersection for Chaparral Road at Hayden Road using a portion of the Villa Monterey Park.

Considerations: Some vehicles would navigate the offset and continue on Chaparral Road. The close spacing of the two major intersections would create a highly congested area on Hayden Road, one of the City's major north-south corridors.

Option 1C - Increase the capacity of other east-west streets in this area. This could include widening Indian School Road, widening Thomas Road, extending Camelback Road to Pima Road, and extending Osborn Road to Pima Road.

Considerations: Established neighborhoods would be impacted by the increase in traffic along these roadways. Elementary schools are adjacent to both Camelback Road and Osborn Road.

Option 1D –Improve the pedestrian crossings available in the section of Chaparral Road between Miller Road and Hayden Road via additional traffic control devices.

Considerations: This option would allow safer pedestrian crossings for the area residents to travel across Chaparral Road. This option alone would not decrease the traffic volume on Chaparral Road.

Option 1E – Provide better transit, bicycle, and pedestrian mode choices for the area residents.

Considerations: This would not likely result a significant reduction in traffic volumes on Chaparral Road but could improve area access and help reduce traffic volumes in conjunction with other measures.

Option 1F - Eliminate the age restriction on the residential units with front yards and driveways along Chaparral Road. Younger residents may be more accepting of the traffic conditions along Chaparral Road.

Considerations: The Villa Monterey Homeowners' Association would have to amend their Codes, Covenants, and Restrictions (CC&R's) to allow this. This does not improve the current conditions along this section of roadway; it may allow residents to occupy these residential units that have more tolerance for the conditions, however families with children may have similar concerns about traffic volumes.

Option 1G – Use a combination of the elements described above. For example, redesign the section from Miller Road to 78th Street to operate as a one-way, westbound street with two lanes; eliminate the existing center turn lane and medians; provide on-street parking; install a traffic signal at 78th Street; and improve the Scottsdale Road and Chaparral Road intersection to provide dual westbound left turns.

Considerations: Travel speeds would likely increase with one-way operation, and may not be consistent with on-street parking. Traffic volumes would not be reduced to local street levels. Some increase of traffic volumes on the area local streets would be likely due to vehicles using the corridor to travel in the opposite direction. A traffic signal is not likely to be warranted at the 78th intersection.

Resident Commentary:
City Transportation staff met with Villa Monterey residents on April 25th, 2007, to discuss the Chaparral Road issues. Staff listened to the residents' concerns, provided information about the upcoming City Council Special Meeting, and answered questions about the current study. During that meeting, attendees were provided with a list of seventeen "alternatives to widening" that had been identified during the Transportation Master Plan discussions. They were also able to suggest alternatives that were not on this list. The residents were asked to rank these options from one to five to identify their preferred solutions. A copy of the complete list of alternatives is provided in Appendix G.

Staff received 82 responses to the listed options for Chaparral Road alternatives. The top six preferred options identified by the responding Villa Monterey residents were the following:

1. Install traffic diverters or similar devices to discourage through traffic.
2. Improve signage on the Loop 101 Freeway to direct traffic on the freeway to downtown Scottsdale via alternate routes.
3. Construct a direct Chaparral Road to Camelback Road connection using the former Villa Monterey golf course property.
4. Install a traffic signal at the Chaparral Road and 78th Street intersection.
5. Install signage that prohibits drivers from turning onto Chaparral Road during the peak traffic hours.
6. Reduce the east-west through lanes on Chaparral Road at the Hayden Road intersection to one lane per direction and increase the northbound to eastbound right turn lane on Hayden Road at the Chaparral Road intersection.

The six least desirable options identified were the following (listed in order of most acceptable to least acceptable):

12. Convert Chaparral Road to a one-way, westbound street.
13. Construct a wall, traffic diverter, or other device to close Chaparral Road at 78th Street, while leaving the section between Miller Road and 78th Street open to traffic.
14. Modify Chaparral Road to become a "woonerf" street, which would eliminate curbs and add landscaping and parking.
15. Convert the existing center turn lane on Chaparral Road to an additional eastbound or westbound through lane.
16. Convert the existing center turn lane on Chaparral Road to operate as a reversible lane during peak hours.
17. Rezone the lots along Chaparral Road to other than single family to allow redevelopment.

In addition to the 17 alternatives provided to the Villa Monterey residents by Transportation staff, meeting organizer Kathy Feld provided a list of options for the redesign of Chaparral Road to meeting attendees. The residents were asked to check their preferred options and list any options not indicated on the page. A total of 47 responses were received. A copy of the page of suggestions is provided in Appendix G.

Suggestions:	Yes	No
Roundabouts	16	7
Islands with landscaping	18	6
Monument denoting our community	17	7
Trolley route on Chaparral	16	10
Crosswalks	27	
Specifically at 77th and 78th Street	1	
Bike lanes	12	6
On-street parking	7	11
Traffic lights	25	3
Specifically stated 78th Street	11	
Specifically stated 77th Street	3	

A complete listing of the other alternatives suggested by the Villa Monterey residents is included in Appendix G.